# AMERICAN GAS JOURNAL

DECEMBER, 1942

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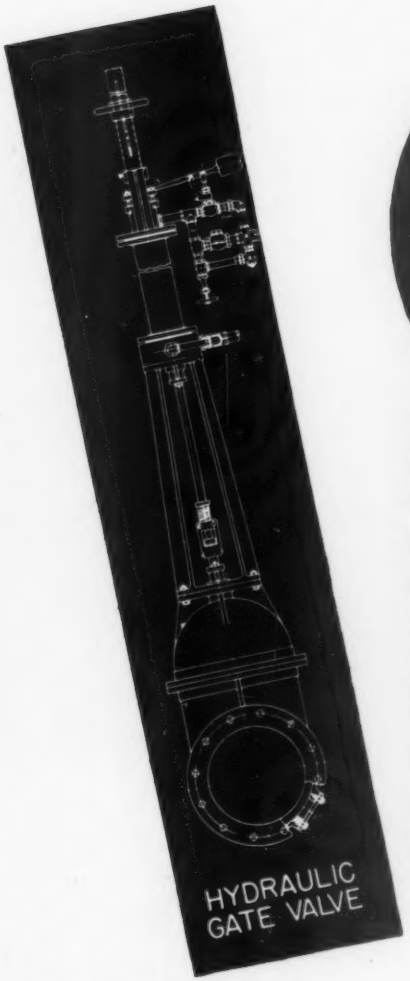


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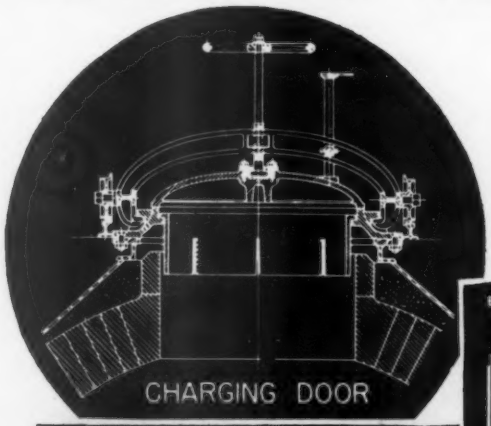


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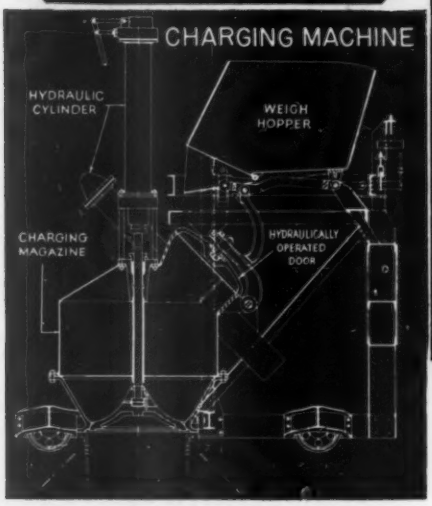


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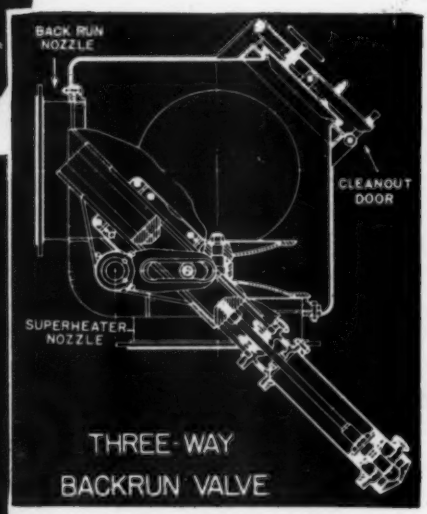


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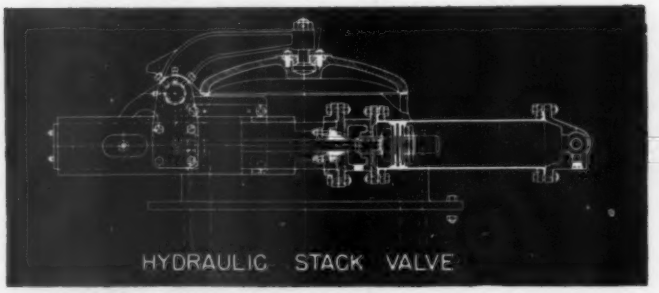


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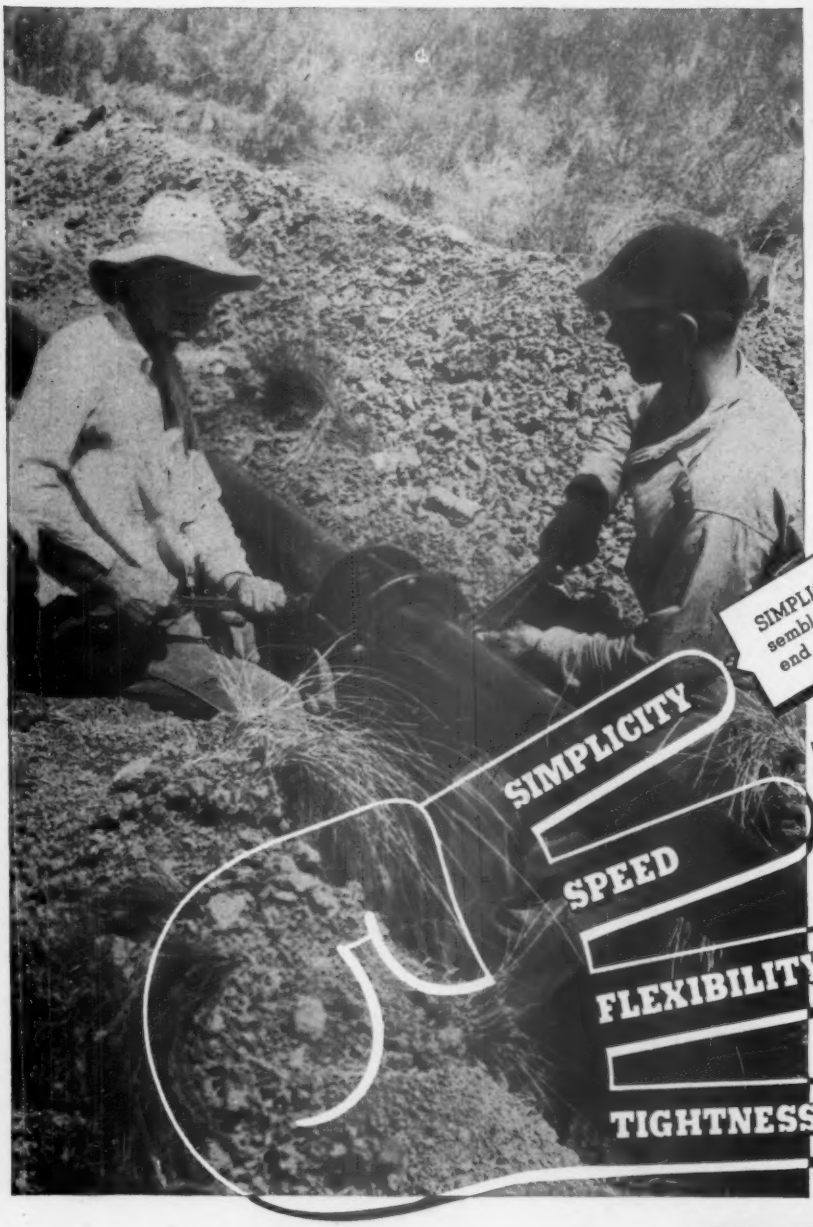


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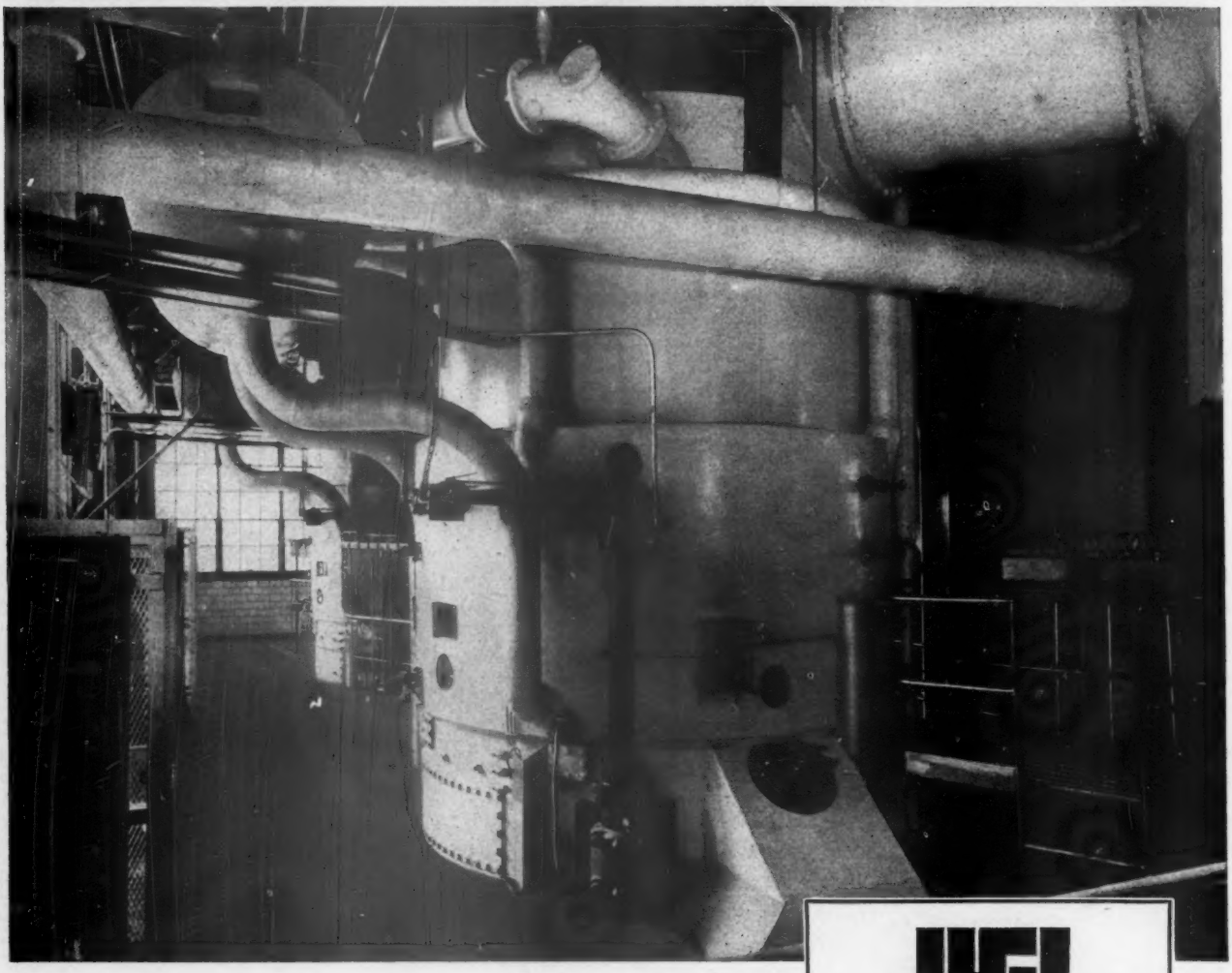

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DECEMBER
1942

AMERICAN
GAS JOURNAL

VOLUME 157
NO. 6

# Southern Counties Gas Company Stages Unique War Games to Test Efficiency of Its Preparations Against Air Attack

By
Lucius S. Flint

IF SOUTHERN CALIFORNIA is ever subjected to enemy raids, measures for protecting the gas supply and avoiding unnecessary damage or loss of life won't be found wanting. That fact has been demonstrated in a series of war games recently conducted in the various districts served by the Southern Counties Gas Co.

This organization and its sister company, the Southern California Gas Co., have long been working on a well-rounded protective plan; once perfected, the management felt it was reasonably complete and efficient. But, to make sure it would do the job—and to give employees practical experience under simulated air raid conditions, it was decided to make actual tests. Outstanding results have been reported in every case.

The method of conducting these war games is of special interest. However, to understand just how they work, we must first examine briefly the general protective system in use by these two companies.

Since Los Angeles County is the most thickly populated and highly industrialized area in the territory served by these companies, the system functioning here will be presented as a model. The same basic setup is used everywhere else in the system—although on a smaller scale.

## Emergency Base Equipment

The three major divisions normally operating within the county remain unchanged insofar as the emergency organization is concerned. In each division there are several normal operating bases where tools, supplies and equipment are housed.

During the national emergency, however, 16 special locations have been designated as emergency bases for tools, supplies and equipment. These bases are manned by carefully-selected people who live in the immediate vicinity. The emergency base men were selected for their ability to handle emergency repairs.

Each emergency base is equipped with complete blackout facilities and enough food to last for two days. Also stationed here are certain trucks which are especially equipped for air-raid use and are supplied with emergency permits for blackout operations. Additional heavy-duty repair trucks containing all necessary heavy-duty equipment and fittings are permanently stationed at operating bases, are always ready to move on a moment's notice.

## Raid Preparations

In the event of an alarm, the special personnel immediately reports to base, remaining there—except when out on assignments—until the all clear is received. The normal operating bases will be additionally manned immediately in the event of an actual raid. Better than half of the company's operating personnel has instructions to report automatically on receipt of the "all clear." Or in case the "all clear" is received during working hours, the entire force would immediately be available. Also on call are the employees of contractors who construct underground facilities for the company.

Also stationed at each control center within the county is a gas company representative, an expert utility squad member. His job is to analyze damage information received from local air raid wardens and to dispatch help as it is needed.

## Damage Reports

On receipt of a damage report, the control station representative reports to a company control station, giving his analysis of the warden's report. The company control station then notifies the central gas company control station and is advised as to how many men and how much equipment should be dispatched to the scene of the incident.

The function of the central control station is to maintain an over-all picture of what is happening in order that dissipation of men and material on minor incidents can be prevented. Of course all control centers have complete information on gas company operations within the area served. They're also supplied with messengers who could carry necessary instructions in the event that phone service was disrupted. The messengers are equipped with bicycles, are selected for their thorough knowledge of the districts in which they will work.

## Distribution System

The entire distribution system has been divided into several hundred small areas, each of which can, if necessary, be isolated from the rest of the system in order to maintain service to the balance of the system. The district operating supervisors, who are in charge of the various district offices, are trained in the operation of their respective districts so that in most cases, small sections of mains within those isolated areas could also be shut off without interrupting service adjacent to breaks in the mains.

A number of emergency connections between the present distribution system and the feeding transmission system which also runs through various parts of Los Angeles County have also been made. These emergency tie-ins will add an essential element of flexibility.

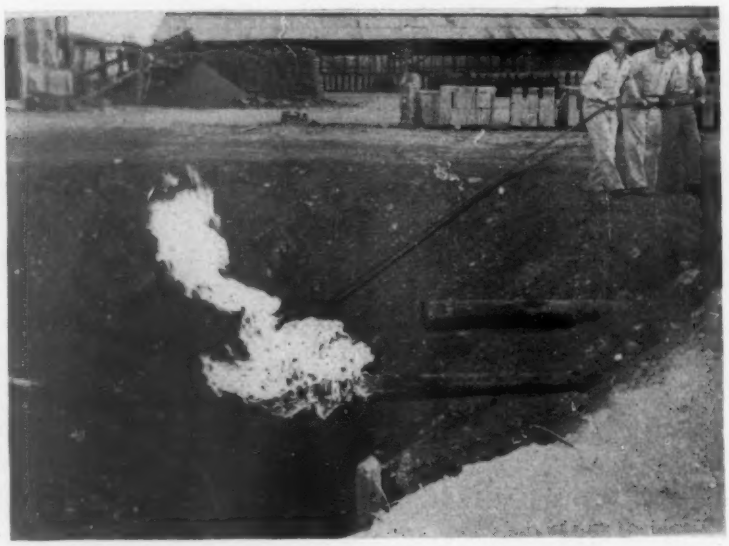


Figure 1. Fire from a broken main is extinguished by a piece of equipment consisting of a specially constructed rubber stopper screwed into the end of a long pipe. A crew is steering the stopper into the end of the pipe.

## Duties of the Utility Squad Men

Primary duties of the utility squad men are three in number: to stop fires, to maintain service to the greatest extent possible and to restore interrupted service after the raids. All restoration work will be held off until the raid is over, personnel being held ready for more pressing emergency duties.

Probably the most ticklish job of the three is that of controlling fires and handling outages. The Southern California companies have prepared for this job through extensive research work.

A committee made up of top men from both companies began study of the problem by staging a miniature blitz in a specially equipped outdoor laboratory. First, a "bomb crater" was dug, with stubs of a cast iron main and a steel main running into it. Necessary metering and regulating facilities were installed so that either high or low pressure gas could be delivered to the crater in carrying quantities and at controlled pressures.

For its experiments in controlling holder fires, the company set up metal chamber covered with boiler plate to represent a portion of a holder crown. The chamber is so constructed that gas can be introduced in any desired quantity. A hole in the boiler plate simulates damage to the crown.

With these two setups and a large open area in which field conditions could be duplicated, the company was ready for both testing of shut-off and fire control methods and for the training of personnel in the methods developed.

## Devices Employed

The research men decided immediately that the use of valves or other fixed shut-off devices did not entirely fill the need and that the bag-inflation process was likely to require too much time. So they began experimenting on some new theories.

The first gadget developed for stopping the flow of gas from a ruptured cast iron main of the low-pressure type was a simple stopper which could be shoved into the end of the pipe. A rubber disc was first used for this purpose. However, due to the heat generated at the open end of the fired main, life of the disc was limited to a single insertion. This problem was overcome by spraying the open end of the pipe with water.

Of course water may not always be available, so it was necessary to develop a more fool-proof device. The gadget finally decided on is made of rubber gasket material but is protected on each side by a standard fine wire pipe cleaning brush—the circular type. The wire not only protects the rubber from the flame but tends to dissipate heat at the end of the pipe.

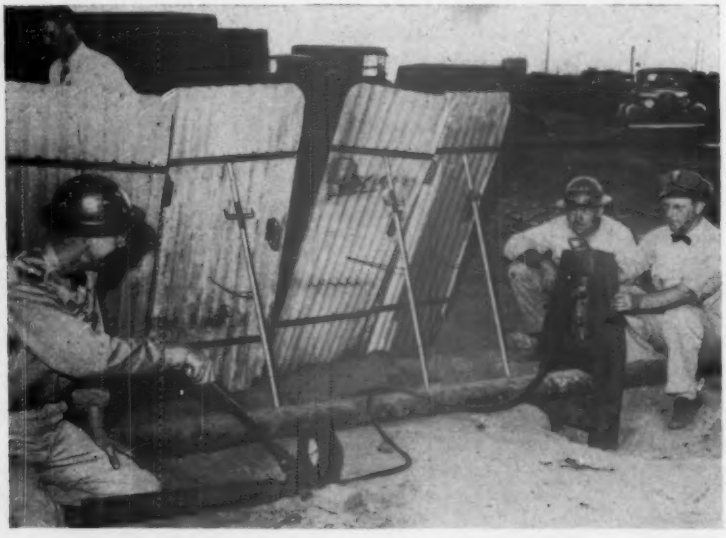


Figure 2. Method of pinching off flow of gas to a broken main by a "pipe crusher". An hydraulic pump exerts 10,000 pounds pressure on the jaws of the crusher, pinching the two sides of the steel pipe together.

For use where debris interferes with the full opening of the pipe end, the Southern California companies developed a semi-fluid, non-inflammable substance which will serve to form a plug. This material, which is composed of 77 per cent Baroid, three per cent Bentonite and 20 per cent water, is injected into the pipe.

The main problem here has been getting the material into the exposed end of the ruptured main. Experiments with various types of pumps and so forth haven't been entirely successful to date but it is believed further progress will be made along this line.

For controlling fires at the ends of ruptured high-pressure mains of mild steel, the company has developed a hydraulic pinching device which will either completely close the main or reduce its aperture to a point where the fire can be controlled. This equipment consists of a frame made of 5-inch channel iron, two removable shear plates, a 50-ton capacity hydraulic ram and a 10,000-pound per square inch hydraulic pump. Total weight of the device is only a little over 200 pounds, which means that it can be carried conveniently from one job to the next.

Tests have shown that this equipment will close the open end of a pipe up to six inches in diameter and will deform only a relatively short section of pipe on either side. The strength of welds on steel pipes is considered adequate to stand up under the pinching pressure at the broken end.

For use in extinguishing a broken end main fire where it is impractical to shut off the flow, the Southern California companies have developed a successful process involving the use of inert gas. It is injected into the combustible gas stream to dilute it to a point where it is non-combustible. The injection must be made through a service pipe or, where possible, through a small pipe introduced in the open end of the main.

Experiments were made with both nitrogen and carbon dioxide. Apparently the latter has proved most successful. A field injection apparatus developed for this job consists of a squat carbon dioxide cylinder and a ¾ pressure valve, a ¾ I.D. tube. The tube must be long enough to reach to the bottom of the cylinder, is welded to the nipple connecting the valve to the cylinder in order that the liquid carbon dioxide can be drawn from the cylinder in an upright position. Connection from the valve or injection pipe is made by means of a ¾ I.D. high pressure rubber coupling. A cylinder of this type will provide about 134 cubic feet of gas or enough to extinguish from one to three fires, based on extensive experiments.

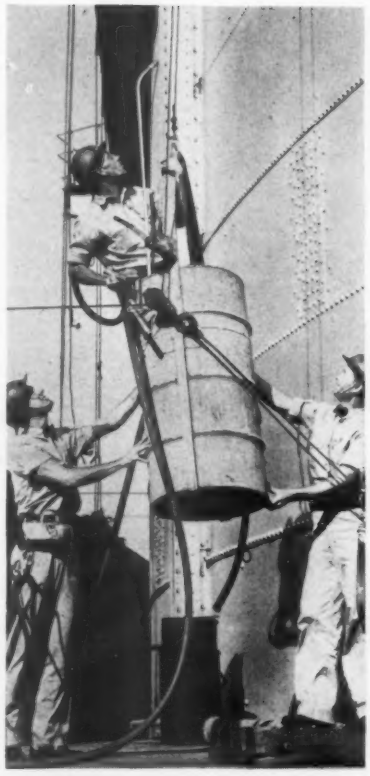


Figure 3. A special holder crew is equipped with apparatus to fight holder fires. A member of the crew is shown ascending to the crown of a holder in an emergency bucket.

It was found that in using inert gas for extinguishing a fire burning from an open main at both sides of a crater, it was necessary to inject the gas into both sections of the main simultaneously to prevent re-ignition. The company also discovered that where the crater walls are very hot from long burning of the gas, they will cause re-ignition of the gas after extinguishment. To overcome this, it is necessary to cool the walls of the crater with water before extinguishing the fire.

## Extinguishing Holder Fires

Several methods were tried for extinguishing holder fires including the use of water-fog, asbestos blankets, flame-proofed canvas, sand bags, vented snuffers, Bentonite mud and redwood plugs. Water-fog was found the most successful of all, with plugs and sand bags coming second. A vented snuffer constructed from a Westinghouse meter body was found effective on large holes.

A small water-fog unit has been developed for field use with emergency trucks. The water is placed in the 30-gallon pressure tank and pressured at 90 psi. The tanks have been converted for this job from propane gas service. The nozzle discharges three G.P.M. at 90 psi. pressure and generates enough fog to keep workmen comfortably cool and to control a temperature of a moderate fire.

Since a permanently-piped fire system might be damaged in an enemy raid, the Southern California companies are using gasoline-driven outfits for plant yard purposes. The pump employed here is a triplex positive displacement type of rugged construction, is equipped with a 55-gallon tank and 300 feet of hose on two reels. This type of pump will pick up water from any low-pressure supply source and deliver it to the fog nozzle at 600 to 800 psi. Wherever possible, taps have been made on water-holder tanks to make available the large volume of water in the holder tanks.

Figure 4. A broken main is set afire in the bomb crater. A crew member protected from the heat by his asbestos suit, plays a stream from fire extinguisher on the flame. He was unable to put out the fire.

## Tests of Equipment and Plan of Organization

To test the performance of this equipment and also the efficiency of the organizational setup, the company held a scientifically planned test attack at Santa Monica.

The first step in the test was to determine where bombs might *actually* fall during a raid. On a sheet of tracing paper over-lying a 600-foot scale map of this area three military objectives, including the gas company's Stanford Ave. station were outlined. Bombs (a small steel bearing was used as a "bomb") were thrown at these objectives from a distance of approximately 40 inches, which is 24,000 feet to scale. A sheet of carbon paper was placed under the tracing paper, marking side up so that a mark was made when the bomb struck. In this manner, a bomb pattern was made.

It was assumed that the raiders would be carrier-based, 15 in number and each carrying five 600-pound bombs, a total of 75. Five times this number or 375 were dropped in order to get some diversity of hits. The total was then divided by five, canceling the multiplication. The 375 bombs were distributed so that 325 went into the large aircraft plant, 25 on a smaller aircraft plant and 25 on the gas company's Stanford Ave. station.

The area bombed was calculated and the length of the main in the area measured. Assuming the destructive diameter of a 600-pound to be 40 feet, the length of main was multiplied by 40 and this figure divided by the total area bombed. The ratio thus obtained was multiplied by the number of bombs dropped and the result assumed to be the number of hits sustained.

When this number of hits scored was computed, the bomb pattern was superimposed on the 600-foot scale map, with the direct hits scored being counted and the near misses added until the total number of planned incidents agreed with the mathematical determination of those incidents. Whether by coincidence or validity of assumptions, the number of direct hits equalled the number of hits mathematically determined.

Some 20 hits were scored, both by calculation and by counting direct hits and each of these was numbered and written up. A set of two-inch by four-inch cards was used to record the incidents, the cards being numbered one to 20 inclusive, with each card representing the incident bearing its number. The cards were then thoroughly shuffled and four cards dealt off the top (this is the division by five mentioned previously).

This shuffling and dealing was repeated four times, with the following results:

| Deal No. | Incident Numbers | | | |
|---|---|---|---|---|
| 1 | 11 | 2 | 10 | 4 |
| 2 | 5 | 1 | 6 | 15 |
| 3 | 18 | 20 | 4 | 12 |
| 4 | 20 | 19 | 10 | 8 |

Deals one and three were selected as the ones to inflict on the district; each spread over a 30-minute interval, with approximately 30 minutes in between. This selection was the only element of discretion exercised in the whole process of determining hits.

A prearranged schedule of reports coming into the superintendents office was written up on a schedule which spaced the incidents evenly over the 30-minute period. These reports purportedly came from control centers, the company's Stanford Ave. station, the West Los Angeles station and the Venice Engine room. Actually, the reports were phoned in by an umpire.

One umpire was in a room by himself, phoning in reports to the superintendent's office and receiving calls put from the superintendent's office to all points except the Stanford Ave. station.

Another man was in a room by himself, receiving calls put to the Stanford Ave., station and checking crews out and in. A third man was in the superintendent's office, while a fourth was appointed an observer at large.

Calls were received by a dispatcher who wrote the message he received on a form titled "Out Message" and carried it to the superintendent's office. One man was stationed here to receive these messages. He and a helper located the supposed incident on a valve map, observed size of the main, location of shutoff valves and so on and noted these observations on a form. To this form, one of the superintendent's assistants attached a small map (cut from a regular valve map) of the area affected by the shutoff valves and gave the report and the map to the superintendent.

The superintendent studied the data and took whatever action he deemed advisable. He specified who was to go on the mission and wrote instructions on the "Out Message" form.

The "Out Message" was then given to a man who devoted his time to dispatching the crews. As the men were dispatched, they reported to the party assigned for checking the crews in and out, giving him an estimate of the time required and the number of men they would be taking. If he agreed to the time required, he told them to leave the room and write a report of action taken and then report back to him after they agreed on time interval.

Here are a few reports, just as they came in:

Control Center calls, reporting: "Gas main broken in an alley east of Inglewood Blvd. 100 feet north of Jefferson; large fire."

Operator at Stanford Ave. calls, reporting: "Sudden increase in differential on south distribution line. It jumped about a minute ago from line 3.0 to 4.0."

Control Center calls, reporting, "Gas company holder station on fire."

Once assigned to a job, a crew and its equipment were not available for further assignments until sufficient time had elapsed to enable them to travel to location of the supposed damage, make the repair and return or report by telephone. All possible delays were taken into consideration in arriving at these time estimates including traffic delays.

After the supposed raid, meter readers were assembled at the plant and sent out to supposedly turn off and turn on heaters that had theoretically, been put out of service. These men actually made the trips to the supposed sites of damage and waited a long enough time to make the turn-offs or turn-ons before reporting back. Their times were carefully clocked.

As part of this same test, the company dug a second bomb crater where distribution department men practiced the several methods of extinguishing a main fire.

The sixth and most complete test held in the area, the Santa Monica war game provided many employees with invaluable experience and also served to reveal a few weak spots in prepared plans, all of which were easily ironed out. Despite the theoretical severity of the attacks, the umpires held that gas service was "maintained" during the raid.

# The Manufactured Gas Industry Under War Conditions

By
**Michael E. Shea**
Fuel and Power Section Chief
Office of Civilian Supply
War Production Board
Washington, D. C.

ONLY a short time back this country was confronted with the problem of finding markets for the potentially large output of its industrial capacity. In spite of vigorous attempts at solution, there seemed to be too many employable workers; raw materials and plant capacity seemed far in excess of requirements. Management of the manufactured gas industry, along with management of industry in general, was preoccupied for the most part with the job of finding new business, or with improving standards of service so as to increase sales volume. Apparently, the crowning sin of our economy was its excessive productivity.

This search for markets was abruptly brought to a halt on December 7, 1941. The tremendous task of equipping and feeding our army, navy, and air force; of supplying the civilian population with sufficient goods and services to maintain health, efficiency and morale; and of giving assistance to our allies in this total war of global proportions has opened up markets which have already strained the productive capacity of industry and labor. There is no longer any responsible opinion which holds that we have excessive productivity. Rather, the events of the past year have given foundation for fear that we do not have enough of materials, of men, and of plant capacity.

The manufactured gas industry, a producer of fuel vital to war industry and to civilian life, is faced with a serious potential shortage in capacity during the coming heating season. Since the war began the demand for "on-peak" gas has grown rapidly. Contributing to this demand has been the increasing needs of industrial production, defense housing, workers migrating to industrial centers, and people whose increased earnings permit them a higher standard of living. Sales of manufactured gas for industrial purposes increased 18.5 per cent in the 8 months of 1942 over the like period of 1941. For the same period the use of manufactured gas for househeating increased 17.3 per cent. Presently available data show a continuance of these upward trends.

In addition to such increased demands as stem directly from war production, the manufactured gas industry is faced with a new demand of considerable magnitude arising from the fuel oil shortage. Fuel oil deliveries for the operation of heating equipment have been reduced in 30 Eastern and North Central states by approximately 33⅓ per cent. Additional reductions may be necessary before the end of the heating season.

Since a majority of homes depending upon fuel oil for heat are equipped with gas ranges and other incidental gas-fired equipment, there is a danger that people may gratify their desire for the comfortably high temperatures to which they are accustomed by using such equipment as supplementary heating units. Thus, by substitution, additional loads of substantial proportions would be imposed upon the manufactured gas industry.

The size of this load and its effect upon the gas supply in any community cannot be estimated with precise accuracy. It depends in part upon the prevailing temperatures this Winter, the magnitude of the deficiency of fuel oil for space heating, and the willingness of the American people to adjust themselves to a lower standard of comfort.

We know now that present estimates of fuel oil supplies and requirements indicate that shortages on the East Coast will be much greater than those previously anticipated. The reaction of the American public to a new concept of comfort at lower room temperatures may be influenced through educational programs conducted by industry and the government. Some experts anticipate, nevertheless, that fuel shortages may increase the maximum day demands of certain manufactured gas companies by as much as 50 per cent.

All the elements that have been enumerated above which are conducive to the increasing demand for gas might be advantageous to the industry and the war economy were it not for the fact that shortages of materials, principally gas oils, metals, and labor, tend to limit rates of operation and preclude normal expansion in plant capacity.

The petroleum shortage, which is particularly acute in the states of the Atlantic Seaboard, serves to impose limitations on the rates of operation of manufactured gas companies. Three-fourths of the industry is concentrated in this region and the companies located here consume approximately 82 per cent of the oil used in the manufacture of gas. Although a considerable number of companies have adequate capacity to serve additional loads the assumption of such loads, in some cases, might serve to aggravate the fuel oil situation.

The critical materials situation has necessitated the allocation of materials in general, and metals in particular, to war production and to the production of other essential goods and services. Shortages of materials such as steel, copper, and aluminum are so acute that it has been found necessary to reduce below normal the industrial consumption of metals for maintenance, repair, and replacements and to reduce the size of inventories.

Thus, these two opposing elements, the increased demands for gas and the limited amounts of materials and fuels available for the operation and expansion of facilities give rise to a conflict that not only invites control but makes control inevitable if failure of war objectives is to be avoided.

Limitation Order L-174 is the government's effort, evolved in cooperation with the industry, to help control manufactured gas services within the framework of a war economy which establishes war requirements and essential civilian requirements as the primary functions of every industry in the land.

As finally drafted, Limitation Order L-174 was based on a careful investigation made by the War Production Board of the actual conditions in the industry. Specific information as to plant capacity, holder capacity, maximum peak day demand, the contribution to peak demands of various classes of load and other pertinent information was obtained by

questionnaire and through conferences with representatives of the industry.

A tabulation of the statistical data submitted showed that the peak day send-outs in the winter of 1942-43 for 118 systems out of a total of 300 were estimated to exceed 75 per cent of capacity deliverability. The anticipated peaks of twenty-five systems were estimated to exceed capacity deliverability. In all cases capacity deliverability plus holder capacity exceeded or was equal to maximum estimated peak day requirements. Further discussion with company representatives indicated, however, that the estimates of requirements, for the most part, failed to evaluate the effect of the potential fuel shortages. Moreover, subsequent increases in demand show that many companies underestimated the effect on load of war production. Indeed some companies have already experienced demands which equal or exceed the maximum day estimated for the winter of 1942-43.

The submitted data showed also that opportunities for reducing peak loads through the elimination of non-essential industrial and commercial consumption are significant, but not large.

After careful review of all the data, it seemed clear that prompt action was necessary to insure an adequate supply of gas to war producers and essential civilian services.

The substantive parts of Limitation Order L-174 are concerned with maximizing gas supplies, the restriction of deliveries to new installations, and with the methods by which deliveries shall be curtailed if the supply of manufactured gas is insufficient to meet demand.

Each utility is required to operate its gas manufacturing, transmission, storage, distribution, and other facilities to achieve the maximum practical output of gas. The companies are authorized to effect voluntary agreements for interconnection with non-utility producers of manufactured gas. Wide discretion is vested with the Director General for Operations in the control of the operations of manufactured gas companies and over agreements for interconnection. Upon the direction of the Director General for Operations, materials may be made available to the industry for interconnections which could not be obtained under ordinary priority procedures.

The delivery of manufactured gas for the operation of gas-fired equipment by non-residential consumers is prohibited by Section (d) if the equipment was not operated by such consumers or was not located on the same premises prior to September 1, 1942. The exceptions to this general prohibition are (1) deliveries of gas may be made to new installations if the total gas burning capacity of such equipment is less than 150 cubic feet per hour, or (2) the new equipment replaces existing gas-fired equipment of equal or greater capacity or (3) deliveries are specifically approved in advance by the Director General for Operations.

New or increased deliveries of manufactured gas are prohibited by Section (e) for the operation of space heating equipment unless (1) such equipment was installed or converted from some other fuel prior to September 1, 1942, or (2) the equipment replaces gas-fired space heating equipment of equal or greater capacity, or (3) was installed prior to November 15, 1942, in a new building and such equipment was specifically in the construction contract and the foundation of the structure was completed prior to September 1, 1942.

In the event of realized shortages of gas, the Order provides a pattern of curtailment which is designed to safeguard deliveries for war production and essential civilian goods and services. To accomplish this objective, war goods and essential civilian goods and services are itemized in a list designated as Exhibit "A." Deliveries to consumers which fall within the classifications of this Exhibit, are not to be reduced until deliveries to all other consumers are reduced in the following sequence and amounts:

**(1) First, to consumers purchasing gas under interruptible contracts, provided that deliveries (other than space heating deliveries) are not reduced to war plants and producers of essential civilian services listed in Exhibit "A".**

**(2) Second, to consumers who have standby facilities to the extent that such facilities can alleviate the shortage.**

**(3) If further reductions are necessary, these are to be prescribed by the Director General for Operations.**

The Order also provides that any utility may apply for exemption of its system or any portion of its system from the operation of the Order.

Thus far the administration of the Order has been largely a matter of considering applications by consumers who believe they are entitled to additional gas supply. From September 19 through October 23, 427 such applications were filed by manufacturing and commercial establishments. Approximately 85 per cent of these applications were granted. During the same period 295 applications were filed to permit the delivery of gas for the operation of new space heating equipment. Practically all of these requests were disapproved.

One of the major criteria used in deciding upon applications has been whether the gas supply would come from a coal gas or from a water gas plant. The policy has been followed of permitting expansion of service, within the limits of available capacity, in the case of coal gas plants. Expansion of water gas production, on the other hand, involves the use of large quantities of oil and hence has not been as readily permitted. This distinction is now being narrowed in consideration of the effort to promote conservation of all fuels.

Other criteria used to test the advisability of approving an application for new service are: Will the new service be used for war production or the production of essential civilian goods? Could the applicant use solid fuels instead of gas? Will the granting of the application save fuel oil?

The major problems in the administration of Sections (d) and (e) of the order have revolved around applications for service where new equipment has been installed with the consent of another branch of the War Production Board or where consumers who owned and operated gas-fired equipment prior to September 1, 1942, have moved such equipment to an area which is threatened with a deficient supply of gas this winter.

Under the terms of the original order, such consumers had a right to request service. In order to solve this problem Order L-174 has just been amended (Amendment No. 1 to Order L-174 was released by the War Production Board on November 13, 1942) to prohibit the installation of gas-fired equipment which, under the order, is not entitled to receive deliveries of gas, and to provide definite rules governing the delivery of gas where there has been a change of ownership of the gas equipment or of the premises where it is installed.

Another administrative problem has particular reference to deliveries for residential space heating equipment. In some instances it is difficult to ascertain whether certain types of equipment were installed before the dead-line. Many domestic consumers who use other fuels for their primary space heating requirements have supplemented their heating equipment by purchasing gas burning room heaters of various types. These heaters seem to have been available at retail stores and in some cases

*(Continued on page 44)*

# Colorado Public Service Appliance Salesmen "Merchandise Service" for Duration

By

**J. Kearns**

RATHER than see its staff of well-trained, veteran appliance salesmen disperse to other jobs through the lack of non-priority merchandise to sell, the New Business Department of Colorado Public Service Company, Denver, Colorado, has set up a plan whereby the 38 salesmen of the utility will henceforth "sell service" in place of gas ranges, water heaters, etc.

The program recognizes the fact that every salesman has undergone several years of training to make him the efficient appliance man he is and the fact that following the war, it will be difficult to replace the staff. Therefore, according to C. A. Patterson, supervisor in the New Business Department, the Public Service Company intends to keep every man on the payroll (except those called into military service of course) for the length of the war, simply through "converting" them from actual merchandise sales to the promotion of "fix up" appliance reconditioning. The plan has been laid out jointly by E. M. Roland, Mr. Patterson, S. J. Tinsley, all supervisors in the Sales Department. The first step was to discontinue gas appliance sales for the duration in early February, when salesmen in the electrical appliance and gas appliance departments were consolidated into one group, and put through a series of training classes held in the Gas Hospitality House auditorium of the Public Service Company. Service classes took up in turn "approach" on the subject of putting non-usable appliances back into condition, methods of making adjustments on gas furnaces, water heaters, etc., and a special class on gas refrigerators, another on gas ranges, a third on water heaters, etc. Classes were "taught" by veteran service men. Each salesman was expected to be able to make minor repairs and adjustments himself if necessary, and to recognize the repair needs of any appliance uncovered. Approximately five weeks were consumed in readying the staff for the new job before the "conservation service" program got under way.

The original 38 men were cut to 31 by the end of this period, as several men left for military service. Each remaining man was given a separate section of the city in which to canvass for service work, each section containing 35 square blocks. A man may reasonably be expected to consume a year or so in covering this area.

All these sections are carefully "mapped out" on a bulletin board in the sales office, and each man will be credited with the amount of service work derived from his section. Their jobs will be primarily bringing in service work, helping the war effort along by keeping appliances in good condition, and making adjustments to consume less gas. Each man has been furnished with "calling cards" which introduce him as a representative of the Colorado Public Service Company service department, and provide the opening wedge for an entry into the home. Once inside the home salesmen are asked to examine every appliance used, and particularly those stored away for any reason, and to make suggestions for whatever service work is required. A special booklet has been prepared which instructs the housewife on how to use her gas range, water heater, etc., most efficiently; and one of these is left on every call. Every emphasis, of course, is laid on the lowest possible consumption of gas for full efficiency.

Readjustment to this new work has not been difficult, according to Mr. Patterson. Each man simply goes over his territory as he did in selling in the past, carrying with him a screwdriver, a small wrench, and simple tools for making adjustments "on the spot," a lantern for examining water heaters and gas furnaces in the basement, and a few simple replacement parts. All men drive their own automobiles—although at the outset it was planned to use a large group in a bus for saving rubber. First few weeks proved that this was impractical, and men were told to use their own cars.

Results accomplished during the first few months of the campaign have been excellent, according to Mr. Patterson. Chiefly, Public Service salesmen have discovered fully-operative gas appliances which needed only a small adjustment to put them in first class order, a number of ranges and water heaters which were out of use because of needed service, and scores of bad habits on the part of users. Housewives who had been improperly cleaning and adjusting their own appliances were taught the correct method of doing both, while a steady stream of unusable appliances was sent to the service shop of the company. This, incidentally, is the only appliance shop in Denver which is entirely fitted for the repair of gas ranges, gas heaters, water heaters, and other appliances. A full staff of men is on hand to completely recondition any appliance, all the way from installing new parts to refinishing and re-guaranteeing it. There are no restrictions on service, which is charged for at the rate of $1.25 an hour, except that the shop carries only a parts inventory on ranges sold through the downtown Public Service showroom. Otherwise, if new parts are necessary, the Public Service Company informs the housewife of the name of a dealer who carries them in stock, and has them billed separately to her in the event she okays the work. In this way, dealers are willing to cooperate with the Public Service Company, particularly since most other shops which have been able to handle gas appliance repairs are now out of business. As much "free work" as possible is done in the minor adjustment or repair classification, the gas customer being charged only for such work as must be taken to the major repair shop. The $1.25 an hour rate is slightly lower than exists elsewhere in Denver, and does not mean a profit for the company. Actually, Public Service Company expects only to "break even" on its service work according to Mr. Patterson, and considers the essential value of the program the fact that housewives will consume less gas for the length of the war, and extremely valuable personnel will be retained on the payroll.

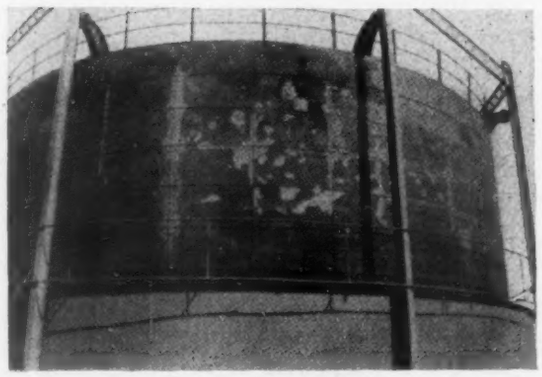
# Bomb-Damaged Gasholder Quickly Repaired

## An Instance of Co-operation

A STRAY enemy bomber engaged on a daylight nuisance raid emerged from low cloud "somewhere over England" and found itself, by chance, close to a small gas-works. So tempting a target was not to be passed by, and the Luftwaffe's lone representative made a reconnaissance of the target from a height of about 200 ft. After a preliminary run-up, he released a stick of 100-lb. H.E's. and promptly made off into the clouds again. Blast, debris, and bomb splinters split a main seam of the holder for a depth of five plates and riddled the crown and side sheeting with scores of holes, one splinter passing completely through the holder, while another punctured the water tank. The gas ignited, but the fire soon died out as the holder grounded, and though the fire brigade were promptly on the scene their services were not required.

The arrangement of the works made it impossible to isolate the damaged holder and supply the district from alternative storage. In any event, the other holders being interconnected with the main holder all the gas on the works escaped within a few minutes, so considerable were the leaks.

So for the first time in the history of the undertaking the district was deprived of gas, and the management were faced with a very ticklish repair problem with limited staff and facilities at their disposal.



The Holder at Work Again

An S.O.S. was sent out to a neighbouring undertaking, and a fully equipped repair gang was put at the disposal of the "blitzed" works. The difficulty, however, was to raise the holder sufficiently to bring the damaged sections out of the tank to effect the necessary repairs. It would have taken some time to obtain a compressor—though another undertaking in the same county offered one—to lift the holder by air pressure.

It was therefore decided to attempt to raise the holder by gas pressure. Accordingly the carbonizing plant which was fortunately undamaged save for the roof being blown off the retort house, was pushed to maximum capacity, a spare bed of retorts being quickly put into commission. Carbonizing periods were substantially reduced, and the greatest output of which the manufacturing plant was capable was put into the damaged holder with no other assistance than the ordinary exhauster.

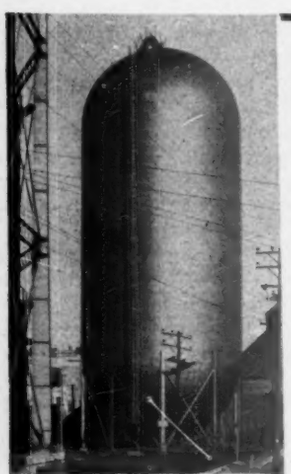
The holes in the crown had, of course, previously been patched; and as the holder slowly lifted from the tank the splits in the side sheeting were temporarily plugged with wooden wedges and clay as soon as they came into sight. The repair gang had brought oxy-acetylene cutting apparatus with them, and the new plates were cut to the required sizes and bored for the bolts in advance.

Then, as a sufficient area of the sheeting was exposed for a new plate to be affixed, the temporary plugs were whipped out and the new plates bolted into position, the repair gang working with the gas blowing out into their faces. Some of the men were, indeed, affected by carbon monoxide, but, fortunately, none seriously, though the foreman in charge had to be resuscitated on one occasion with oxygen.

With the production plant working at full capacity the holder gradually emerged from the tank, and patch after patch was bolted into place, jacks being used to force the seams to meet, until the holder was fully inflated and the lowest hole effectively sealed. The holder was gas-tight again.

The whole operation took four days, and the accompanying photograph gives some idea of the amount of work involved. This difficult repair job, executed so promptly and effectively, is a fine tribute to the enterprise of the men concerned and the ready co-operation of the neighbouring undertaking.

—*Gas Journal, London*

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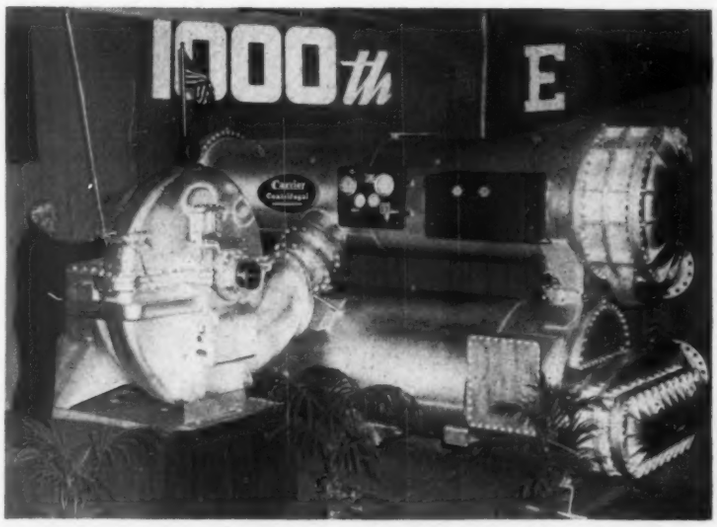
# Equipment and Appliance Manufacturers at War

THE MANUFACTURERS of gas-burning appliances, temperature controls, air conditioning equipment and gas plant equipment are now devoting most and in many cases 100 per cent of their manufacturing facilities to the production of a varied line of equipment, parts, etc., to help win this war. In many cases new buildings have been erected and equipped to increase production. It is a record of achievement that the entire gas industry can point to with pride and satisfaction.

The following are just a few of the companies that have turned practically all production facilities to the war effort:




Carrier Centrifugal No. 1000 was a center of interest as Dr. Willis H. Carrier, founder, sent the unit on its way to Wright Aeronautical Corp. to help "Keep 'Em Flyin' "

**Robertshaw Thermostat Co.** in peace time Robertshaw made temperature controls on many gas appliances, such as ranges, water heaters, coffee urns, steam tables, etc. Now, these controls are only a small part of their production. They are now making shells, boosters for

John A. Robertshaw, Pres., and H. T. Ryan, Vice Pres. Robertshaw Thermostat Co.

shells, percussion primers, hand grenade fuses, fuses for shells, airplane instruments, etc. Three hundred of their former employees are now in the armed forces, but all the others and many new ones are now employed. Robertshaw recently received the Army-Navy "E" award.

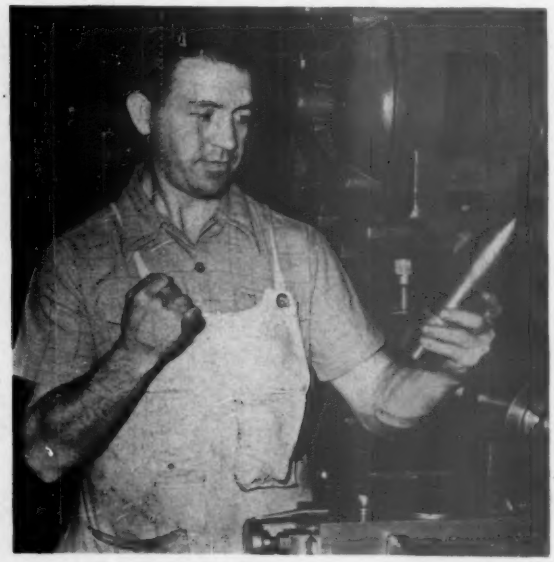
**Carrier Corporation**, a pioneer in the manufacture of air conditioning equipment. Their regular products are as important during war times as in normal periods, if not more so. While some of these have to be modified for war usage, Carrier is able to carry on in its own field in addition to making products that cannot be classified either as air conditioning or refrigeration equipment.

These products are being used by war production industries and the Army, Navy, Coast Guard, Lend-Lease and Maritime Commission. The range in types of this equipment extends from water coolers to multiple installations of giant refrigeration machines, with many types of refrigeration, heating and air conditioning units in between.

To further Carrier's all-out war production, there has been created a War Products Committee with a

Battery of Presses having capacities of from 90 to 250 tons exerted pressure in plant of George D. Roper Corporation.

senior officer as chairman. This committee coordinates all sales, engineering and manufacturing facilities that may be applied to turning out war equipment other than air conditioning, refrigeration and heating. The initial step by the committee was to conduct a training course for 40 engineers and construction superintendents called in from branch offices throughout the country. The purpose of the course was to give field men an intimate knowledge of the Carrier plant. Thus key men all over the country are better qualified for closer cooperation with the Army, the Navy and war industries . . . the goal being to use Carrier's facilities 100 per cent for war production. Carrier Corporation has received the Navy "E" award.



USES NO GLOVES ON THIS JOB

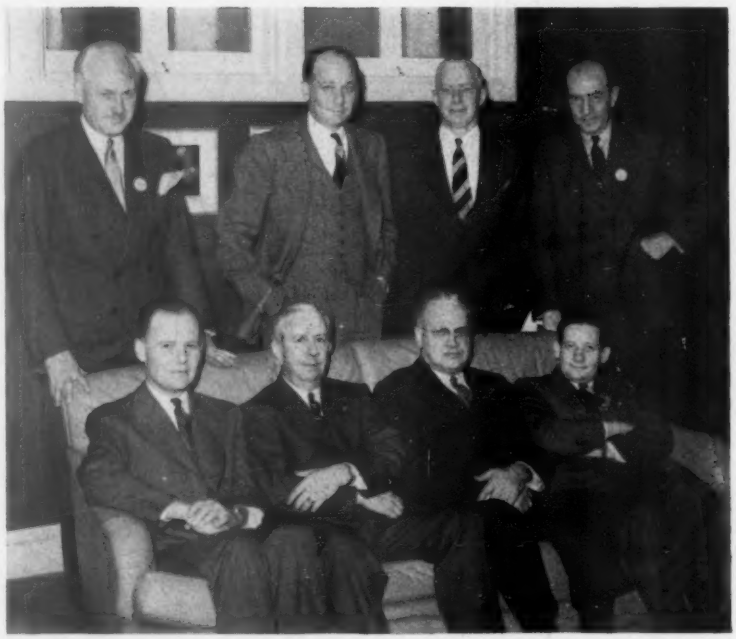
The man holding the shell is Ex-Lightweight Champion of the World, Sammy Mandell who is now working out in the Roper plant.

**Geo. D. Roper Corporation.** For 57 years, the peace-time production of Roper was gas ranges. On July 31, 1942, they discontinued their manufacture. Then the conversion to 100 per cent war production started. A new ordnance plant was built and equipped with many new tools and machines. The entire personnel was converted to war work. Roper tool engineers, designers, plant engineers and many others used to good advantage the lessons learned from yearly model changes in gas ranges. A system of production control was set up and men quickly adapted themselves to it. Expert ceramic engineers, applying their technical knowledge, soon became control men for heat treating operations. And thus all Roper employees were soon fitted into the war production program.

**Minneapolis-Honeywell Regulator Co.** The peace-time products of this company were automatic temperature controls, industrial controls and recording instruments. They received their first war contract in May, 1939. Since that time they have added four floors to the Minneapolis plant and contracted for innumerable other implements and weapons of war. All plants are operating 24 hours a day. Amongst many war products now being produced are fire control equipment and aeronautical devices. All old employees have been provided employment and hundreds of new workers have been added.

**Pittsburg Water Heater Co.** Their peace-time products consisted principally of various types of domestic gas fired water heaters. When conversion to the war effort started, they put in a large amount of new

C. J. McNamara, Pres. Pittsburg Water Heater Co.



BOARD OF DIRECTORS, MINNEAPOLIS-HONEYWELL REGULATOR COMPANY.

Seated, left to right, C. C. Buckland, secretary, W. L. Huff, vice president and treasurer, George A. DuToit, Jr., vice president, C. B. Sweatt, vice president in charge of sales and president of the Brown Instrument Company.

Standing, left to right, Cyril J. C. Quinn, director, H. W. Sweatt, president, Minneapolis-Honeywell Regulator Company, Richard Brown, chairman of the board of Brown Instrument Company, and Mark C. Honeywell, chairman, Minneapolis-Honeywell Regulator Company.

L. W. Coate, Vice Pres.
Pittsburg Water Heater Co.

equipment. A large percentage of their production now is ordnance and chemical warfare items. All old employees were fitted into the new program and many new ones added.

**Ward Heater Co.** The peace-time production of this company was gas-fired floor furnaces. Now they are 100 per cent in war production, making airplane parts and gasoline tanks. All old employees and many new ones are now working on war production.

**Tappan Stove Co.** Gas ranges were the peace-time product of this company, which has been converted wholly to the manufacture of war products. These new products consist of fuel containers and funnels for transporting fuel and for fueling planes. Galley equipment for large bombers. Wing flaps and fuel tanks for airplanes. Connection boxes for marine use, etc.

This covers but a few of the hundreds of plants, whose peace-time products served in many ways the entire gas industry from coast to coast. In every case the old employees were easily fitted into the new scheme of production, and thousands of new employees added. When the history of plant conversion from peace- to war-time production is written, the resourcefulness of management and plant personnel of gas equipment and appliance manufacturers, will receive the recognition they justly merit.

# Short Cuts For The Gas Plant Operator

By

**W. F. Schaphorst, M.E.**

Newark, N. J.

*How Many Pieces In Those Piles?* If it is a triangular pile like Fig. 1 it is necessary to count only the lowest layer and multiply it by a number that is one greater. Divide by 2, and that's the answer. Thus you can easily figure by merely counting the bottom layer of Fig. 1 that there are 28 pieces in the pile. $(7 \times 8) \div 2 = 28$.

For a pile like Fig. 2 make only three counts as follows: A—count the number of pieces in the lowest layer; B—count the number of *complete* layers; and C—count the number of pieces in the top *incomplete* layer. The rule then is: multiply A by 2, subtract B, add 1, multiply by one-half of B, and add C. Thus referring to Fig. 2 we have; $20 \times 2 = 40$; $40 - 6 + 1 = 35$; $35 \times 3 = 105$; $105 + 4 = 109$. There are 109 pieces in the pile.

FIG. 1

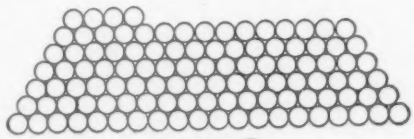


FIG. 2

# How To Insert One of Those Troublesome Small Screws

Here is a valuable kink that was shown to me the other day by one of the ablest mechanics I have ever known. He gave me permission to tell about it and to draw this sketch. I thought I knew most of the kinks regarding inserting small screws that are ordinarily handled with difficulty, but this was a "new one" to me and I consider it the best of all because it requires no equipment aside from a little friction tape.

It is exceedingly simple. Place a bit of friction tape around the tip of the screw driver, as indicated in the sketch, so that there will be a snug fit—sufficiently tight to hold the screw on the end of the screw driver. Then go ahead and insert the screw. That's all there is to it. Try it and you, too, will use this method.

## A. R. Bailey Becomes Major in U. S. Army

Allan R. Bailey was recently appointed a Major in the Army of the United States with headquarters at Fort Mason, San Francisco. He is functioning as Personnel Officer for the various ports of embarkation and staging camps in California and Oregon.

As the result of his long service in the gas industry in supervisory and executive capacities, Major Bailey is particularly well qualified to assume his new duties. For many years he has been associated with Coast Counties Gas & Electric Company of San Francisco. At the time his commission was awarded he was Assistant to the President of this company, Mr. H. L. Farrar. He is widely acquainted among utility companies and manufacturers, particularly those located on the Pacific Coast.

In addition to his numerous executive duties Major Bailey has found time to take active part in Association work. For several years he has been a member of the Subcommittee on Approval Requirements for Central Heating Gas Appliances. In June, 1941, he was appointed its Chairman. During his administration his committee extensively revised and strengthened approval standards for various types of central heating gas-burning appliances. Adoption of these new standards by the American Standards Association is now awaited.

# Operating District Gas Regulators Under Water

DUE TO THE FACT that district gas regulators are located along streets and highways in underground pits, they easily become flooded especially on level ground or where ground waters are high. With the exception of the highly sensitive open lever arm-and-weight controlled gas pressure regulator, all other instruments and fixtures might be protected by weatherproof casings against the ravages of the flood water—but the most important apparatus of the gas distribution system, the district governor itself did not get its proper protection against the influence of water so far.

E. I. Dutch, Engineer of Westchester Lighting Company at Mount Vernon, New York, devised a patented means and method whereby underground or under water gas pressure regulators can receive such water protection, which not only prevents the access of the water to the regulating mechanism, but eliminates the additional hydrostatic weight of the above lying water column.

It is known, that the gas on its course from the source to the customer is contained and is flowing in steel or cast iron pipes except at the district gas regulator. Here delicately balanced diaphragm, prepared of animal skin—separates the gas from the atmosphere. For this reason constant vigilance must be exercised, operating charts must be very frequently examined, to see that the safe operation of the gas regulator is not interrupted. The whole mechanism of the regulator is so sensitive that the difference of a few thousands of a pound pressure will throw it out of its present balance. That is why friction and resistance offering stuffing box cannot be applied to the operating stem of the regulator. An extra animal skin water proofing diaphragm which by its attachment to the operating stem is not only a make-shift protection, which is liable to break a day after its installation and periodically has to be replaced—but it helps unbalance the regulator setting when it's under hydrostatic pressure of the flood water. Gas companies always had emergency calls—on account of suddenly increased dangerous gas pressure, or no pressure at all, due to troubles

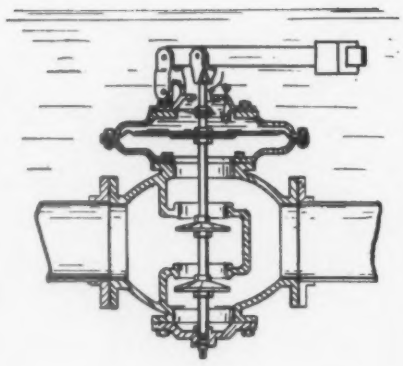


FIG. 1

caused by water, which flooded the underground located gas regulators.

Innumerable service breakdown could be attributed to the rottedness of the skin diaphragms of the regulators caused by air and water borne factors. Dirt, sand and easily soluble calcium in sediments—which after the evaporation of the supporting water, hardens the animal skin diaphragm which in its most flexible state otherwise would last indefinitely, in the surrounding tar-bearing gases.

As fig. 1 shows a district gas regulator which in an underground flooded pit opened its portholes on account of the water column above the balancing diaphragm permitting increased volume and gas pressure to go through the regulator. The relatively big area of this diaphragm

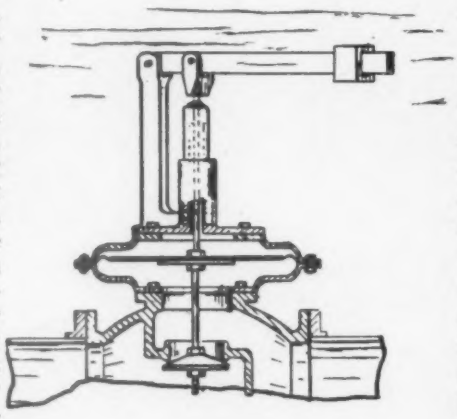


FIG. 2

which on one side is under inlet gas pressure, the other side the pressure of the counter weights with a preset excess pressure, has been kept in a finely balanced position previously Additional water weight over this big diaphragm area not only disrupts the preset balance between inlet pressure and the control weights but it increases the distribution pressure to such extent, which will cause serious consequences on the connected appliances. At the time of the subsequent necessary over-hauling of the gas regulator, the water soaked and weakened diaphragm must be replaced for safety reasons.

On fig. 2 is shown a telescopically operating mercury hydrostatic seal placed over the opening in the cover plate. Any additional hydrostatic pressure caused by one inch or one hundred inches of water above the hydrostatic seal dislocates only the level of the mercury above and beyond the whole regulating mechanism which is entirely free from the effect of the water pressure within the flooded pit. This water protective device is a non-interfering hydrostatic seal made from non-perishable material. It does not require any inspection once installed. The periodical or yearly over-hauling and inspection of such governor may be postponed many times with the greatest safety, because due to the practically hermetical sealing the two worst deteriorating factors, i.e., the atmospheric and aquatic conditions, cannot and will not influence the endurance and life time of the operating diaphragm and of the valving apparatus.

Excluding the possibility of access of water to the animal skin not only the unwanted pressure fluctuations and dangerously increased pressures are prevented by this seal but it acts also as a foolproof preservant of the skin diaphragm. The easy fabrication and simple installation on already operating regulators makes this non-perishable protective device an ideal double duty, safety installation on gas regulators. Mr. Dutch is issuing licenses upon request to gas companies to install this device on their distribution lines.

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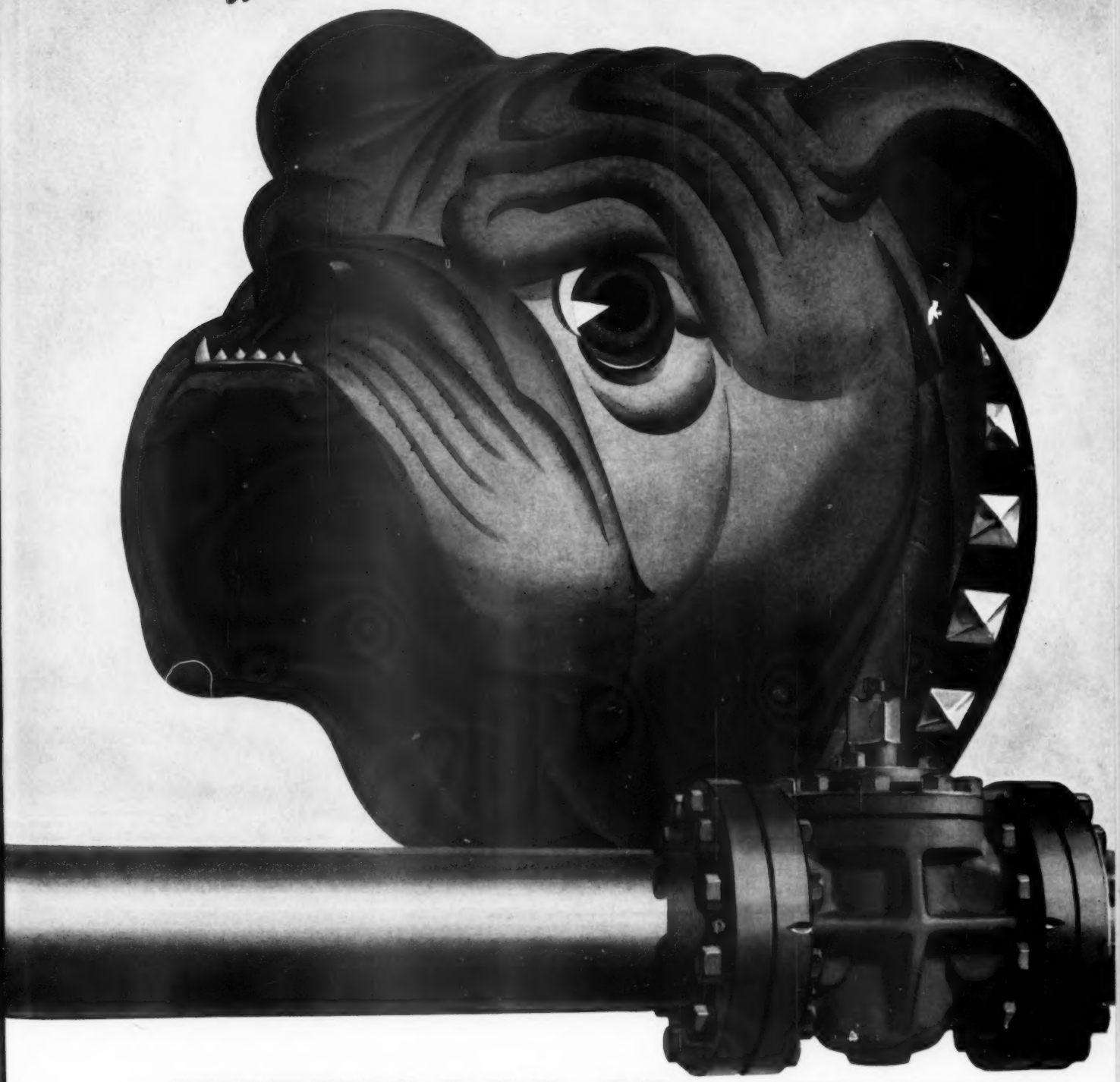

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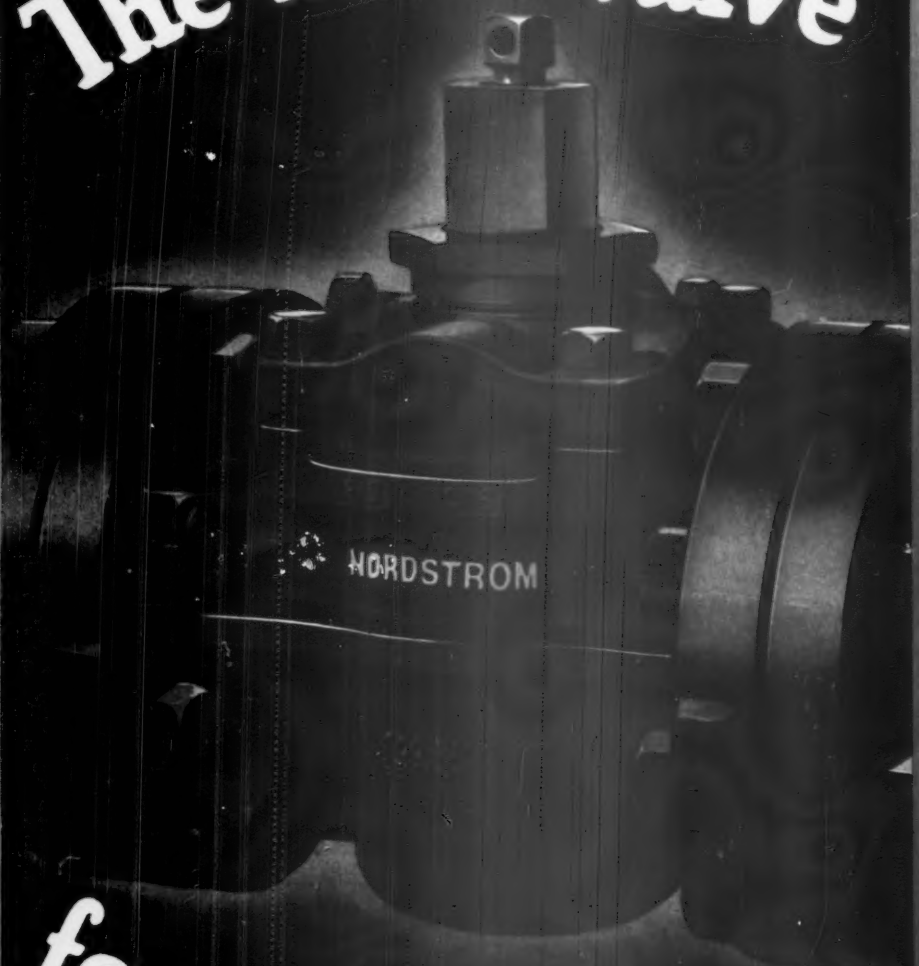


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# Wartime Chemicals from Natural Gas*

By

**Dr. Gustav Egloff**

President American Institute of Chemists

FOR MANY YEARS natural gas has been used mainly for heating and generation of steam and electrical power. In the last few years, however, the tempo of research and development has increased enormously. A much higher field of utilization for natural gas than as fuel is seen in the conversion of the hydrocarbons into superior aviation gasolines, lubricants, synthetic rubber, explosives, acetylene anaesthetics, plant life promoters. plastics, solvents, and many other chemical derivatives.

In the Axis countries, methane gas is a widely used substitute motor fuel. The compressed gas is sold at filling stations in exactly the same way as gasoline in the U. S. Buses. trucks, tractors, and power shovels totaling over 25,000 in the U. S. use compressed propane and butane. One truck company has liquefied butane functioning in a dual role as a refrigerant for fruits and meats and as motor fuel for the truck after the cooling has taken place.

Hydrocarbons present in natural gas are methane, ethane, propane, butane, pentanes, hexanes, and heptanes, etc. The first four of those are gases while from pentane on they are liquids useful as gasoline.

Uses for propane which have gained wide commercial application are as refrigerants and solvents in the refining of lubricating oils. Over 50 per cent of the world's lubricating oils are improved in quality by the use of propane. Some other hydrocarbons which can be derived from natural gas are isobutane, isopentane, olefinic hydrocarbons and isooctane.

Out of the total 886,000 tons of synthetic rubber planned for the United States, 705,000 tons of it will come from butadiene and styrene. The normal butane that will be used for butadiene will represent about 80,000 tons a year derived largely from natural gas.

More than 100,000 barrels a day of normal butane are available from natural gas. If this were used just for butadiene making, it would satisfy the entire butadiene requirements in our present synthetic rubber program.

Another type of synthetic rubber is called Thiokol, the raw materials of which also can be made from natural gas. The synthetic rubber program calls for 60,000 tons of Thiokol yearly. Thiokol will be used in retreading tires.

Besides butadiene, styrene, and ethylene, a hydrocarbon of great importance is acetylene, used in the production of the synthetic rubber, neoprene; it is also the base material for nylon, a replacement product for silk.

Natural gas or products therefrom under high temperature conditions yield acetylene readily. It is believed that acetylene can be produced at a lower cost from processing natural gas than by the electro-chemical method of producing calcium carbide.

Germany uses acetylene made from calcium carbide converting it into butadiene by a four-stage chemical process. Neoprene rubber is made from acetylene treated with hydrochloric acid. This type of rubber will be produced at the rate of 49,000 tons a year in the United States.

The Russians start primarily with ethyl alcohol from grain to produce butadiene. Butadiene from ethyl alcohol derived from grain will be one of the sources in the United States' synthetic rubber program. The tonnage of butadiene from grain alcohol will be at the rate of 242,000 a year, representing about one-third of the Buna-S type production.

There are several other types of rubber which are in commercial production, one of which is Butyl rubber. In the government program this type of rubber will be produced at the rate of 132,000 tons a year. Butyl rubber, as of today, is not as good a synthetic rubber for tire use as the Buna-S. Tires made of Butyl rubber have a mileage life of about 12,000 miles with a maximum road speed of thirty-five miles an hour.

There is an important use for synthetic rubber which is fabricated so that billions of minute air cells are present; it is used as a liner in gasoline tanks in fighting, bombing, and pursuit planes. When a bullet goes through the tank, the rubber causes it to be self-sealing.

The question arises now: Is the synthetic rubber product equal to the natural? In general, one can say that synthetic rubber is at least equivalent to the natural; the chemist's goal is not necessarily to synthesize a duplicate of natural rubber but it is certain that whatever properties rubber has that are needed will not only be duplicated, but radically improved and new ones added. Synthetic rubber is superior to natural rubber in gasoline, oil and chemical resistance. The synthetic product is more stable to light and air, and has greater wearing properties. Some trucks using synthetic rubber tires have gone over 53,000 miles. Sidewall tire strength is greater, meaning greater safety and better road gripability. The latter property has been tested out thoroughly on wet and muddy roads. Tests on hills with different trucks have shown that the synthetic rubber-tired vehicle goes up a hill with very little side-slipping, whereas the tires of natural rubber slipped all over the road. On curves when operating the car at high speeds, the synthetic tire is safer than the natural.

With the number of research men in the field of synthetic rubber, with expenditures of millions of dollars yearly, one can feel confident that synthetic rubber tires will evolve with a life of *at least* 100,000 miles or, expressed another way, the tires may well outlive the motor car.

As far as the author is concerned synthetic rubber in the United States is here to stay and will be a permanent industry during the next peace period. With the fall of Singapore our greatest source of natural rubber was cut off. Natural rubber (December, 1941) cost about 22 cents per pound. The price ranged through the years from 3.5 cents to over one dollar per pound. It can be stated that synthetic rubber in mass production will cost less than 15 cents a pound.

Does this mean that natural rubber will not have its uses? As far as tires are concerned, it will not have the dominating position it has held heretofore. Natural rubbers

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** Abstract of an address before the American Institute of Chemists, New York, October 23, 1942, 8 P.M., by Dr. Gustav Egloff, Director of Research, Universal Oil Products Company, Chicago, Illinois.*

vary widely in properties, due to many factors. Producers of natural rubber depend upon the life cycle of the rubber tree, climatic and soil conditions, while the chemically produced rubber will have the exact properties for which its structure and use were designed. Natural rubber contains a number of unknown components, whereas synthetic rubber has one, two or three components of known characteristics.

Natural gas is an important source of high explosives. Natural gas in some parts of the country is being cracked into hydrogen which is combined with the nitrogen from the air producing synthetic ammonia. The ammonia is readily oxidized with air into nitric acid. Combination of the ammonia and nitric acid produces ammonium nitrate.

In World War I the maximum toluene production was at the rate of 15,000,000 gallons a year and practically all came from coal carbonization plants to derive coke for steel making, with toluene as a by-product. The toluene production in World War II from coal carbonization is at the rate of over 25,000,000 gallons a year. According to published reports the demand for toluene is from 250 to 300,000,000 gallons a year—the difference between the volume of toluene from coal and the total demand will come from petroleum, i.e., ten to twelve times as much from petroleum.

Nitroparaffins from natural gas may well develop into one of the newer and valuable sources of high explosives. Methane gas when nitrated produces tetranitromethane. This compound is the most destructive explosive known to man. Unfortunately, no commercial process has been worked out to make this product available for use by our armed forces.

Anaesthetics are vital in a world at war. One of the primary needs of the medical profession has been anaesthetics which do not have post-operative dangers due to pneumonia and nausea. Ethylene has been shown to have properties superior to those of ether and nitrous oxide. Cyclopropane. although known since the year 1882, was still a laboratory curiosity until the end of 1930 when it was first applied in human anaesthesia. It has been rather widely adopted since as being one of the safest anaesthetics.

Olefins have been investigated as fruit ripening agents and for use in inducing an accelerated plant growth. The first gas to be utilized for this purpose was ethylene.

Natural gas hydrocarbons can be used as basic materials for the synthesis of plastics. The coming importance of plastics cannot be overemphasized at this time, since airplane manufacturing is calling for more of the plastics for use in plywood planes. Steel now used in many places is being replaced by plastics. In the war industries where the fabrication of planes takes place the methylmethacrylate resins are used as the transparent non-shatterable parts where great visibility is necessary, and this will undoubtedly be used by the automobile industry after the war is over. A high degree of visibility from all over the motor car will be worked into the new design requiring less supporting frame work, and a clear vision rooftop with sliding window will undoubtedly take the place of present designs. In fact, the motor car of the future may well be substantially all plastics.

One big field of research and development that merits discussion is carbon monoxide and hydrogen or the water gas reaction to form hydrocarbons. The hydrocarbons produced are methane, ethane, ethylene, propane, propylene, butanes, butylenes, gasoline, gas oil, and Diesel oil to solid paraffin wax.

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# Reconditioning Inside Stem Gate Valves in the Distribution System

By
**H. W. Nicolson**
Assistant Engineer,
Public Service Electric & Gas Co.,
Newark, N. J.

A PROCEDURE for reconditioning main line gate valves has been developed in Newark, New Jersey, which has been one hundred per cent successful to date. Inside stem gate valves in a gas distribution system are normally operated very seldom and we have found that when you do want to operate a valve it is liable to be stuck tight, operate very hard, or it will not give you a complete shut off. The chief causes for this are:

1. A hard gum or varnish-like substance on the thread of the stem which prevents the thread from screwing through the block between the gates.
2. Steel stems (Isbell Porter Valves) which are rusted in the stuffing box gland.
3. Stuffing boxes which have old, hard packing or incorrect type packing.

When a valve leaks past the gates the usual cause is gum, scale, dirt, or tar in the bottom of the valve which prevents the gates from seating properly.

The valve maintenance crew must be very high type, husky men with the "Patience of Job" and they must be closely supervised. All valves must have a tap hole in the bonnet piped up to the valve box, and there should be a test pipe on each side of the valve so that pressures can be closely watched during operation of the valve.

The equipment necessary is a portable steamer to safely heat the "drip oil" and supply the steam pressure to force it into the valve, a tank of natural gas under high pressure, piping, valves, and hose.

It is a simple matter to free the stem from the stuffing box with penetrating oil and to re-pack the valve if necessary.

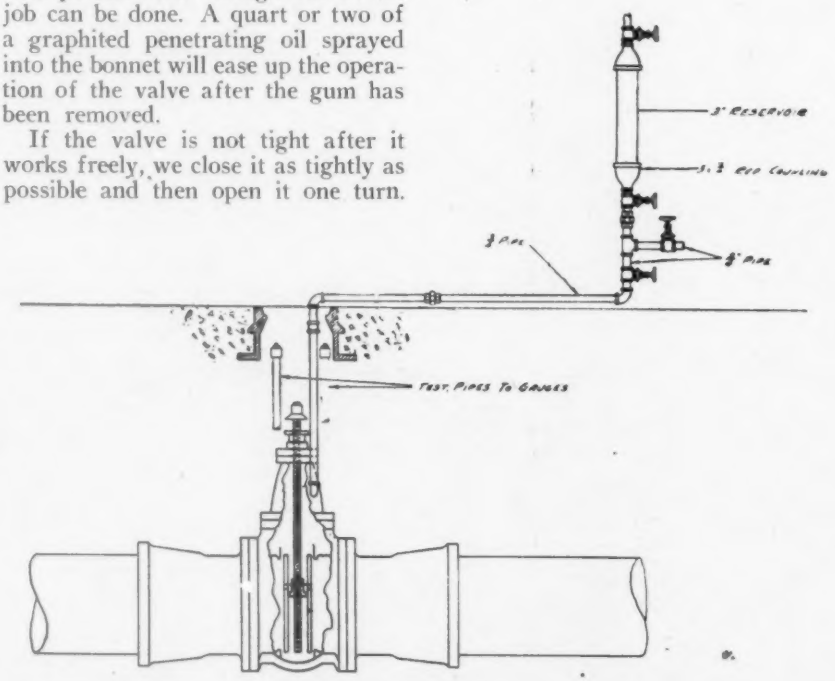
In order to soften and remove the gum from the stem, a gallon or two of hot drip oil is forced through the bleed pipe into the bonnet, using either steam pressure or natural gas. The pressure on top of the drip oil should be five or ten pounds higher than the main pressure so that the hot oil is sprayed to all parts of the valve. Several applications of the hot oil may be necessary before you can move the gates (in fact, we had to go back five days on one bad valve before it would work properly), but with patience and enough hot oil the job can be done. A quart or two of a graphited penetrating oil sprayed into the bonnet will ease up the operation of the valve after the gum has been removed.

If the valve is not tight after it works freely, we close it as tightly as possible and then open it one turn. We then fill the pipe reservoir with drip oil, force this in the valve with natural gas, and give it three or four quick shots of natural gas. This tends to blow out the material which is preventing the metal-to-metal seat of the gates. It is sometimes necessary to repeat this operation a number of times before you get a good shut-off.

Before opening the valve the last time, we force in a couple of quarts of good lubricating oil.

We have found that "drip oil" when heated has the fastest softening action on gum and tar of any of the solvents. It is also available in large quantities where manufactured gas is distributed. Where drip oil is not available, other solvents could be used.

*Presented at the 24th Annual Meeting, American Gas Assn., Chicago, October 5-6, 1942.*

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# RECENT COURT DECISIONS *Affecting Gas Utilities*

## Avoid Liability for Injuries to Pedestrians

By
**Leo T. Parker**
Attorney at Law
Cincinnati, Ohio

WINTER is approaching! Therefore, as usual, the relative percentage of injuries to pedestrians will materially increase, unless precautions are taken. But it is positive that the gas company officials may by taking proper precautions at this approaching season importantly reduce company liability for damages from this source.

Therefore, for the purpose of imparting modern law on this subject of liability elimination, we shall review several higher court cases decided during the past few months and involving this subject of law.

Since a majority of pedestrians are injured on sidewalks and streets it is important to know that although actually the abutting property owners may own the streets and sidewalks, the same are subject to the right of the state and city to direct the method and manner by which their uses shall be administered. Moreover, the municipality is charged at all times with the inescapable duty to keep its streets open, in reasonably good repair, and free from nuisances.

In other words, the public ownership in streets, sidewalks, alleys, and other public passageways, includes their full width and extends indefinitely upward and downward, and the municipaliy may prohibit encroachment upon such limits by all persons and by all means when the enjoyment of such public right is or may be in any manner hindered, or obstructed or made inconvenient or dangerous.

Nevertheless, gas companies are subject to liability for injuries caused by negligence of their employes, irrespective of the ownership of streets, sidewalks and other passageways.

### Defective Barricades

Generally speaking, all pedestrians may prove actionable negligence, if employes violate these duties: (1) A duty owing to the pedestrian to protect him from injury; (2) a violation of that duty; (3) injury resulting therefrom. When these elements are shown to have been present actionable negligence exists.

Therefore, when a pedestrian is injured as a result of a defective or dangerous barricade the gas company may be held liable.

For example, in Oklahoma Natural Gas Co. v. Shirley, 123 Pac. 2d, 669, it was disclosed that a pedestrian was injured as a result of stumbling and falling into an excavation made by gas company employes during the course of their duties.

During the trial the pedestrian proved that barricades had been placed on two sides of the excavation, and these jutted onto the edge of the sidewalk some three inches. However, no barricades or protection had been erected to prevent pedestrians using the sidewalk from stepping into this hole. While walking along the edge of this walk, the pedestrian stumbled and fell into the hole, and suffered the injury.

In holding the gas company liable, the higher court held:

**"Any person or corporation who causes an excavation to be made at or in close proximity to the edge of the sidewalk used as a public thoroughfare owes to a person using such sidewalk a duty to erect such barricades and protections so that such person while in the exercise of ordinary care would not probably be injured by reason thereof and the failure to do so constitutes negligence."**

Therefore, in order to escape liability from this source gas company officials should warn their employes to exercise great care and caution to know that barricades completely surround excavations and that they are erected in view of preventing pedestrians from walking into an excavation from all sides.

### Negligence Must Be Proved

Under no circumstances may a gas company be held liable for an injury to a pedestrian, unless the testimony proves that the injury resulted from negligence on the part of gas company employes or officials.

Therefore, it is important to know that a person traveling on a public street of a city which is in constant use by the public, while using the same with reasonable care and caution, has a right to presume that such street is in reasonable safe repair, and is reasonably safe for ordinary travel night as well as by day, throughout its entire width, and is free from all dangerous holes and obstructions. Therefore, gas company officials should be reasonably diligent to instruct employes to abide by these legal rules.

In this manner liability may be eliminated.

For example, in Van v. Southern Counties Gas Co., 124 Pac. 2d, 350 reported May, 1942, it was shown that a pedestrian was injured when he stumbled over a meter box maintained by a gas company. The pedestrian sued the gas company for damages.

During the trial the counsel for the pedestrian argued that the gas company was negligent in maintaining the meter box with a hole in the top of box which caused the pedestrian to fall and sustain the injury. Later the counsel for the pedestrian attempted also to prove that the pedestrian fell on account of the box being higher than the surrounding soil.

Although the lower court held the gas company liable, the higher court reversed the verdict and relieved the company from the liability.

## Independent Contractor Rule

One method by which gas company officials may *always* avoid liability for injuries to pedestrians is to employ independent contractors to perform work. An independent contractor is any person or firm who is paid a stated price for doing a job, but the employer must not have detailed control over the workmen. See the leading case of Keans, 2, SO. (2d) 510, reported July. Here the city permitted WPA to install 18 miles of gas pipes. The city only paid for a portion of the expense, but the WPA did the work and also controlled the workmen. A pedestrian stumbled over pipe and sued to recover for the injury. The court held only WPA responsible, saying:

**"WPA was an independent contractor. Lights may be placed in parts of a city and the city may omit same in others without there being exposure to liability for damages to persons injured because of the absence of lights at a given place. . . . The WPA's relation to the town was that of independent contractor and even though it be admitted that the pipe was left on a sidewalk in such manner as to be a menace to pedestrians, still defendant (city) cannot be held responsible for the results of the accident."**

## Exclusive Control Necessary

As above mentioned, a municipality holds the fee in its streets in trust for the purpose of public travel, transportation, and other purposes. Actually the owners of property on each side of the street own the land to the center thereof. For this reason the courts require that both the municipality and the owners of property, on which a street abuts, shall exercise reasonable care to prevent injuries to pedestrians, and other citizens or users. However, since the city exercises control over the streets and sidewalks the law expects the municipal officials and employes to use reasonable care to prevent erection of dangerous obstructions, and to use reasonable care to discover and remedy dangerous conditions and defects.

Of course, neither a gas company nor a municipality is an insurer of the safety of persons using its streets, but it must see that such streets are kept in reasonably safe condition for travel in the usual mode. This is responsibility from which the municipality ordinarily cannot relieve itself by any attempt to place the performance of such duty upon another as an owner of abutting property. For instance, the fact that a property owner, by agreement with the city erects structures within a street does not exempt the city from responsibility created thereby. (Wabash R. Co. v. Defiance, 52 Ohio St. 262, affirmed 167 U. S. 68.

As above explained, if an injury results from negligence of an independent contractor the city may be relieved from responsibility. See leading case of Todaro, 114 La. 253. The facts of this case are that an employe of the Southwestern Gas and Electric Company was seriously injured when a canopy of a building on the Fair Grounds, owned by the City of Shreveport, then being demolished by a Federal agency, the Civil Works Administration, fell to the sidewalk in front of the building. His suit for damages against the city was rejected by the lower court on the ground that the CWA's relation to the city was that of independent contractor. The higher court upheld this decision and explained that the city was exercising no control or supervision over the manner and method by which the work was being done.

## Law of Contributory Negligence

The law is well established that a citizen or gas company employe who is injured as a result of his own negligence is not entitled to recover damages. Considerable discussion has arisen from time to time as to just what is meant by the legal term "contributory negligence." The leading case of Hickey, 157 Atl. 26, clearly illustrates the legal meaning of this term.

In this case it was shown that a pedestrian alighted from a street car and started to walk to the pavement when the driver of an approaching automobile frightened her by blowing his horn. She hurried to escape the oncoming automobile and, without looking where she was going, tripped, as she was about to step on the pavement, on a pipe located at the edge of the sidewalk. She sued to recover damages.

The counsel contended that the pedestrian was contributory negligent and, therefore, not entitled to recover damages because she had tripped over a plainly visible pipe that had been in the sidewalk for many years without having effected injuries to other pedestrians.

However, in view of the circumstances, the higher court held the injured person entitled to recover damages, saying:

**"It is well known that, instinctively, one in an emergency is more apt to fail in exercising sound judgment than where there can be a delay to deliberate on some course of action to avoid injury. As a result thereof, the rule that one is required to act in such a manner as to avoid injury to himself and to use such precautions as would be taken by a reasonably prudent person is not vigorously enforced in situations of sudden danger. It has frequently been said by the courts in this state that one in a position of sudden peril is not, as a matter of law, guilty of contributory negligence in failing to use sound judgment while attempting to escape impending danger, provided that he has gotten into the danger without negligence or fault of his own."**

On the other hand, the law requires that a pedestrian shall be observant of where and how he walks so as to avoid dangers which ordinary care and prudence would disclose. In other words, while he is not bound to look for hidden dangers, he is required to walk with his eyes open, to observe his course, to see what is open and apparent, and to use that degree of care which the surrounding circumstances would dictate to a person of ordinary reasonable prudence. Failure to do so relieves the city from all liability.

For example, in Glatstein, 149 So. 158, it was shown that there is a meter box sunk in the pavement and flush with its surface. This box is owned by the city and is used by it in the operation of the municipally owned works.

One morning a pedestrian parked her car opposite this water meter box. She alighted onto the six-inch wide curb stone, with her back to the sidewalk, locked her car, and, without looking, and without seeing where she was stepping, turned to her left, stepped out with her left foot, and fell, striking her left shin bone at a point about nine inches from the ground against the sharp top edge of the meter box, causing injuries for which she sued the city for damages.

However, it is interesting to observe that the lower court refused to hold the city liable, and the higher court sustained the verdict, saying:

**"Though a pedestrian, in the absence of knowledge to the contrary, has a right to presume that a sidewalk is reasonably safe, this presumption does not permit him to be heedless of his safety or to neglect to use ordinary precautions in observing where he is going and all obvious impediments in his way. . . . This is not a case involving the degree of care exercised by plaintiff, but is one in which, in violation of her legal duty, she exercised no care whatever."**

## Law of Trespass

Another important point of law is that gas company officials and employes are bound only to exercise ordinary care to maintain the com-

pany premises in safe condition. for persons who are expressly or impliedly invited on gas company property.

For example, in Tulsa v. Harman, 299 Pac. 462, the court stated important law as follows:

**"The duty to keep premises reasonably safe for invitees applies only to defects or conditions which are in the nature of hidden dangers, traps, snares, pitfalls, and the like, in that they are not known to the invitee and would not be observed by him in the exercise of ordinary care. The invitee assumes all normal or ordinary risks attendant upon the use of the premises, and the owner or occupant is under no duty to reconstruct or alter the premises so as to obviate known and obvious dangers, nor is he liable for injury to an invitee resulting from a danger which was obvious or should have been observed in the exercise of ordinary care. . . . Under the circumstances of this case we are forced to conclude there was no legal duty due to the plaintiff violated by the defendant (city)."**

## Distinction Between Invitee and Licensee

Frequently the liability of a gas company for injuries sustained by persons, as a result of defective premises or appliances, hinges on the question whether the injured person was an invitee or a licensee.

The term "invitation" may be used to explain the relation between an owner of property and one who rightfully or legally comes thereon. The invitation which creates such relation may be express, as when a company official invites another to come on it, or the invitation may be implied, as when such official by acts or conduct *leads another to believe* that he has a legal right to come on the property.

Gas company officials owe to a licensee *no duty* as to the condition of premises, save that the official should not knowingly let him come upon a hidden peril or hazard, or wilfully cause him harm; while to one invited the official is *under obligation* to render reasonable security to the person for the purposes of the invitation.

Various courts have held that mere permission to enter the premises creates the relation of licensee. However, an invitation, expressed or implied, is necessary to create the more responsible relation of property owner and invitee. See the latest higher court case involving these important points, Myers v. Public Service, 132 So. 416.

Obviously, all employes of gas companies are entitled to recover damages, or payment of compensation, for injuries sustained while within the scope of their authority, or while acting within the scope of the employment. Of course, if state compensation is carried, the employe is entitled to recover payments, although the injury may have been sustained through negligence of the employe. However, if the employe files suit to recover damages, and under the state laws he may under certain circumstances do so, then he cannot recover if the testimony indicates that the injury was *not* the result of negligence on the part of the employer, or his authorized agents.

In other words, if a gas company employe sues to recover damages for an injury he cannot recover if either his own negligence resulted in the injury, or he sustained the injury while acting outside the scope of the employment, or if the testimony fails to prove that the injury resulted from negligence of the employer.

In view of this established law,, the liability of gas companies for damages resulting from injuries to employes is based upon exactly the same laws pertaining to the rights of pedestrians and others to recover damages for injuries. Neither may recover unless proof is given that the injury resulted from negligence of the gas company officials or authorized employes.

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# An Operating Study of the Value of Gasoline for Gas Making Purposes

By
**R. W. Stafford**
Connelly Iron Sponge & Gov. Co.
and
**W. H. Ganley**
Falley Petroleum Co.

THE results of a preliminary investigation made upon a request of the Chicago Office of Petroleum Coordinator to determine the value of gasoline for gas-making purposes indicated that it could successfully be used. This preliminary report was based on data obtained in the laboratory and was published earlier this year. (See September issue of American Gas Journal.)

The data presented in this report covers the results of operating tests made at the Fond du Lac plant of the Wisconsin Power and Light Company on September 2, 1942.

The water gas machine was a Semet-Solvay eight foot reverse flow type installed in 1938. The superheater contained forty-two courses of checker brick, eighty-eight bricks per course. The bricks were staggered with two inch spacing. The carburetor contained no checker brick.

The oil pump used was a Viking rotary pump directly connected to an electric motor which operates only when the oil is being introduced. The oil was metered through a National meter and introduced into the top of the carburetor through an Anthony spray. Normally the oil is preheated ahead of the meter. When introducing gasoline the oil preheater was bypassed and the pressure was reduced to forty-five pounds. The temperature of the gasoline was 75° F. This plant's oil lines have both threaded and welded joints.

The oil line from the tank truck to the machine and the oil pump were frequently inspected for leaks. Only one small leak developed, this being at the top of the carburetor where the oil line was connected to the oil spray. Since the gasoline was used directly from a truck tank, no information was developed regarding possible hazards of storing gasoline in existing gas oil storage tanks.

The pyrometer was located in the top of the superheater which on this type of machine corresponds to the base of the superheater on a standard three shell set. The pyrometer is connected to a Leeds and Northrup recorder.

The machine was equipped with air and steam meters and a U.G.I. automatic control. The BTU content of the gas made was determined and recorded with a late model Thomas recording calorimeter.

The machine was operated for about an hour and a half with the fuel oil normally used. A switch was then made to gasoline without any changes in operation other than by passing the oil preheater.

The generator fuel was 100% coal, twelve hundred pounds being charged every twelve runs. The coal used was a 5 x 2 Fleming Elkhorn containing about 3½% ash.

The period of the test was 10.6 hours during which time 1965 gallons of gasoline were used.

The fuel bed in the generator was cleaned or clinkered the morning of the day before the test run. The normal practice at Fond du Lac is to clean the fuel bed after forty hours operation. Since the machine is operated between ten and twelve hours per day, the fuel bed is cleaned about twice a week.

The temperature at the top of the superheater was 1450° F. at the start of the test. Fourteen gallons of gasoline were used per run but this quantity was reduced to eleven gallons after two hours because of an increase in the BTU content of the gas. At the same time the temperature was dropped to 1400° F. Operations were continued at this temperature for two hours and then temperatures were raised 50° at a time over a 2½ hour period until 1650° F. was reached. After a small amount of lamp black appeared in the washbox overflow and qualitative tests showed naphthalene present the temperatures were reduced to 1450° F. and held there during the last two hours of the test period.

The operating cycle used was as follows:

| | | |
|---|---|---|
| Blast | 45 Seconds | Total generator air—3400 cu. ft. |
| Blowrun | 7 Seconds | Total generator air— 450 cu. ft. |
| Uprun | 99 Seconds | 30 lbs. Steam per minute |
| Backrun | 52 Seconds | 75 lbs. Steam per minute |
| Final Uprun | 7 Seconds | 30 lbs. Steam per minute |
| Air Purge | 7 Seconds | |
| Total Cycle | 217 Seconds | |

These figures do not reflect the most efficient operation with gasoline because of changes in operation during the day, made in order to determine the effect of various cracking temperatures. The results shown on the other two enriching agents represent operating figures recorded over thirty-day periods.

The following are results obtained with gasoline as compared with results obtained with other enriching agents normally used at the Fond du Lac plant:

| | *Gasoline* | *Crude Oil* | *Fuel Oil* |
|---|---|---|---|
| BTU of Finished Gas | 519 | 522 | 522 |
| Fuel-Lbs. per MCF | 22.2 | 22.1 | 22.5 |
| Oil-Gallons per MCF | 2.60 | 3.04 | 2.93 |
| Make per Hour—MCF | 71.2 | 78.8 | 79.5 |
| Make per Run—Cu. Ft. | 4900 | 5434 | 5480 |
| Steam—Lbs. per MCF | 24.2 | 21.8 | 21.6 |
| Generator Air—Cu. Ft. per MCF | 785 | 710 | 703 |
| Cu Ft. Air per lbs. steam | 32.4 | 32.5 | 32.5 |
| Percent Backrun Steam | 55 | 55 | 55 |
| BTU contributed to gas per gal | 116,000 | 100,000 | 103,000 |
| Cu. Ft. Oil Gas per Gal. | 75.0 | 67.5 | 70.5 |
| BTU per Cu. Ft. Oil Gas | 1550 | 1480 | 1460 |
| $H_2S$ Grains per 100 Cu. Ft. | 70 | 140x | 100 |

x This oil contained 2½% sulphur.
MCF = 1000 cubic feet.

Trowel tests and observations of the washbox overflow indicated that the best cracking temperature for gasoline is about 1450° F. in this particular machine. At 1550 and 1600 degrees F. a small amount of lampblack appeared in the washbox overflow. At 1400 to 1450 degrees F. the naphthalene test showed none present. At 1500 to 1550 degrees F. the test showed considerable naphthalene.

During this test the time of contact on this machine was fifteen seconds, while with a standard three shell machine it will average about five seconds. Due to this difference in time of contact, a higher temperature will probably be required with a standard machine which has checker brick in both the carburetor and superheater.

The make per hour was lower with gasoline than with the crude oil and fuel oil. For the first four hours of the test, the average make per hour was 78.5 MCF. During this period the temperature was around 1450° F. The higher temperatures (1500-1650°) required longer blast periods which increased the length of the cycle and reduced the number of cycles per hour. During the first four hours of the test period, the runs per hour averaged 17.5 and the make per run 4474 cubic feet. For the balance of the test period, the runs per hour averaged 12.4 and the make per run 5320 cubic feet, or 66.2 MCF per hour. If the temperature carried during the first four hours had been maintained throughout the entire test period, the average make per hour would undoubtedly have been between 75 and 80 MCF.

While it was not possible to determine the amount of tar produced with gasoline, observations of the washbox overflow indicated that the tar production is considerably less than with the crude oil.

The results of tests and analysis of gas samples below show actual analysis of samples taken during test operation. During these tests samples of all the back-run blue gases, up-run blue gases, and blast gases were collected in gas bags. They also show analysis of sample taken from outlet of storage holder before the use of gasoline was started. This represents the gas made under normal operations using crude oil.

In Test Number I, these gases represent composite samples taken between the 33rd and 45th runs on gasoline and between the 5th and 6th coaling of the day's run. There were twelve runs during this period. In Test Number II, these gases represent composite samples taken between the 93rd and 105th runs on gasoline and between the 10th and 11th coaling of the day's run. There were twelve runs during this period.

These sets of samples were taken from the machine as follows:

Blast gases taken from top of generator during the blast period.

Uprun blue gas taken from top of generator during the uprun period.

Backrun blue gas taken from backrun pipe during the backrun period.

Two samples were taken at the outlet of the purifiers. One sample was taken about three hours after the test started; the other was taken four hours later. These samples represented the finished gas made with gasoline.

All gas analyses were made by the Bureau of Mines Gas Analyzer over mercury and are reported in per cent by volume.

The hydrogen sulphide tests were made by means of the Tutweiler Burette.

The specific gravity tests were made by the Schilling Gas Density apparatus.

The naphthalene tests were made by passing the gas through picric acid solution and observing the presence or absence of a precipitate. This test was only qualitative.

The heating values of the gas produced were taken from a Thomas Calorimeter chart.

For purposes of comparison the composition of the combined uprun and backrun blue gas was calculated as follows:

## RESULTS OF TESTS AND ANALYSES OF GAS SAMPLES

| Enriching Medium | Crude Oil | Test Number I—Gasoline Used as Enriching Medium | | | | Test Number II—Gasoline Used as Enriching Medium | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Method of Sampling | Snap Sample | Composite Sample of Gases Taken Between 33rd and 45th Runs on Gasoline and Between 5th and 6th Coaling of Day's Run. Total of 12 Runs. | | | Snap Sample | Composite Sample of Gases Taken Between 93rd and 105th Runs on Gasoline and Between 10th and 11th Coaling of Day's Run. Total of 12 Runs. | | | Snap Sample | Average of Finished Gas Samples, Test No. I and No. II. |
| Sampling Point | Sendout Line | Top of Generator | | Backrun Pipe | Outlet of Purifiers | Top of Generator | | Backrun Pipe | Outlet of Purifiers | |
| Kind of Gas | Regular City Gas | Uprun Blue Gas | Blast Gas | Backrun Blue Gas | Finished Gas | Uprun Blue Gas | Blast Gas | Backrun Blue Gas | Finished Gas | |
| Carbon Dioxide | 5.6 | 3.4 | 14.0 | 4.8 | 5.4 | 4.2 | 13.4 | 5.6 | 5.2 | 5.3 |
| Illuminants | 8.8 | 0.8 | 0.0 | 0.4 | 10.0 | 0.4 | 0.1 | 0.2 | 8.6 | 9.3 |
| Oxygen | 0.6 | 1.0 | 1.2 | 0.8 | 0.2 | 0.4 | 0.4 | 1.0 | 0.6 | 0.4 |
| Carbon Monoxide | 22.2 | 34.6 | 8.2 | 26.0 | 22.0 | 38.0 | 9.4 | 25.0 | 22.6 | 22.3 |
| Hydrogen | 30.4 | 45.8 | 3.2 | 58.4 | 30.2 | 41.7 | 3.6 | 59.6 | 32.0 | 31.1 |
| Methane | 13.2 | 2.6 | 0.3 | 4.1 | 10.6 | 3.3 | 0.5 | 3.6 | 10.1 | 10.4 |
| Ethane | 1.2 | 0.0 | 0.0 | 0.0 | 2.0 | 0.0 | 0.0 | 0.0 | 1.9 | 2.0 |
| Nitrogen | 18.0 | 11.8 | 73.1 | 5.5 | 19.6 | 12.0 | 72.6 | 5.0 | 19.0 | 19.2 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| BTU per Cubic Foot of Gas — Thomas Calorimeter | 518 | | | | 526 | | | | 515 | 519 x |
| BTU Calculated | | 297. | 39. | 317. | | 294 | 46. | 309 | | |
| Specific Gravity (Air — 1) | 0.690 | | | | 0.702 | | | | 0.670 | 0.685 |
| Hydrogen Sulphide Grains per 100 Cu. Ft. of Gas—at Inlet to Purifiers | 140 | | | | 60 | | | | 80 | 70 |
| Naphthalene—at Outlet of Purifiers | | | | | No Precipitate | | | | Precipitate Formed | ---- |

NOTE—Analyses Reported in Per Cent by Volume

x Average of 26 readings from Thomas Calorimeter Chart over entire period of test.

Since 55% of the total steam used per run was used on the backrun, it was assumed that 55% of the total blue gas made per run was made on the backrun and 45% on the uprun. The composition of the combined uprun and backrun blue gas was calculated by taking 45% of the constituents of the uprun blue gas and adding it to 55% of the constituents of the backrun blue gas. This was done with the blue gas analyses of Tests I and II and the results of the two tests were averaged. An average was also made of the blast gas analyses of both tests. The calculated average composition of the total blue gas made, blast gases and finished gas is as follows:

| Sample | Blast Gas | Blue Gas | Finished Gas |
|---|---|---|---|
| Carbon Dioxide | 13.7 | 4.5 | 5.3 |
| Illuminants | 0.1 | 0.4 | 9.3 |
| Oxygen | 0.8 | 0.8 | 0.4 |
| Carbon Monoxide | 8.8 | 30.4 | 22.3 |
| Hydrogen | 3.4 | 52.0 | 31.1 |
| Methane | 0.4 | 3.5 | 10.4 |
| Ethane | — | — | 2.0 |
| Nitrogen | 72.8 | 8.4 | 19.2 |
| Total | 100.0 | 100.0 | 100.0 |
| BTU Calculated | 43 | 305 | 519 |

The cubic foot of blast gas made per cubic foot of generator air was calculated by dividing the nitrogen in the blast gases into the nitrogen in air (79%). This gave 1.085. The average amount of generator air used per blowrun was 450 cubic feet, which produced 488 cubic feet of blowrun gas per run. This was 10% of the total average gas made per run.

The percentage of blue gas in the finished gas was calculated from the percentage of carbon monoxide in the blue gas and the finished gas. The carbon monoxide content of the finished gas was corrected for the carbon monoxide in the blowrun gas. This correction was made by deducting 10% of the carbon monoxide in the blowrun gas (blast gas) from the percentage of carbon monoxide in the finished gas. This gave the per cent of carbon monoxide in the finished gas due to the blue gas. The percentage of blue gas in the finished gas was calculated by dividing the per cent of carbon monoxide in the blue gas into the per cent of carbon monoxide in the finished gas. The per cent of oil gas in the finished gas was taken as the difference between 100 and the combined blue gas and blowrun gas. (Blue gas includes whatever coal gas was recovered from the coal used for generator fuel.)

Assuming the same composition for the blue gas and blowrun gas with normal operation using crude oil and fuel oil, the finished gas was calculated to contain the following:

| | Gasoline | Crude Oil | Fuel Oil |
|---|---|---|---|
| % Blowrun Gas | 10.0 | 9.0 | 8.9 |
| % Blue Gas | 70.5 | 70.5 | 70.5 |
| % Oil Gas | 19.5 | 20.5 | 20.6 |
| BTU due to Oil Gas | 301.5 | 303.0 | 303.0 |

From these results and the oil used per MCF, the BTU per gallon, cubic feet of oil gas made per gallon, and the BTU per cubic foot of oil gas were calculated.

Based on gasoline containing 123,000 BTU per gallon, a cracking efficiency of 94% was obtained by calculation. This compares with a cracking efficiency of 70% with the oils normally used.

Due to the use of coal and blowrun, the Pacific Coast Method of calculating oil efficiencies could not be used. Since carbon monoxide is a product of the blue gas reaction and is not formed by any cracking as hydrogen is, the method used for calculating oil efficiency was considered the best.

*(Continued on page 44)*

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# Wartime Maintenance of Customer Appliances

By
**F. M. Rosenkrans**
New Business Manager,
The Gas Service Company,
Kansas City, Mo.

F. M. Rosenkrans

THE NECESSITIES of the war effort of this country are now being felt by industry, business, and the individuals of this nation. No one is exempt. The ordinary conduct of our business and the policies which have been pursued must now be changed in the light of the needs and necessities of our nation to successfully prosecute the conflict. Our leaders tell us that we can expect no short war, that we are in for a long pull and that we must reconcile ourselves to making sacrifices which we never before have been called upon to make. Supplies and materials that we have formerly used in the expansion of our business and improved service to our customers have been taken away from us and are put into our industrial machine for the making of ships, planes, tanks and guns.

For the purpose of procuring and making available materials necessary for our industries and munitions plants to produce the sinews of war, the government created the War Production Board. The War Production Board had broad and extensive authority to limit, and even prohibit the use of essential materials and service conveniences that we in this country have had and used in our daily living, in order that these things might be available for our vital production of munitions. All of us have taken most of these service conveniences as a matter of course. It was the general thinking that the procurement of new things, such as gas appliances and materials for gas services, would become more difficult to procure only because of shortage of materials available to manufacturers. Few people were prepared for the impact that came through the orders from the War Production Board limiting the sale of appliances and services to our customers, and limiting the purchase of same by our customers.

## Gas Limitation Order

The first impact of limitation orders upon the customers of our company was the Natural Gas Limitation Order L-31, which originally went into effect in Missouri on March 15, 1942 and later was extended to a large part of Kansas and certain natural gas operating areas in Oklahoma. The object of the order was to freeze present gas heating and industrial load, and provide gas supply for war industry, because little or no materials would be available to produce or connect to additional gas supply. Few gas companies have any more gas available this winter than they had last year.

## Appliance Limitation

Next came the limitation orders affecting the sale of new appliances and provisions for the repairing of old appliances and replacement of those that are worn out, destroyed, or beyond repair. Other orders were issued limiting the extension of gas mains and the laying of new service pipe to new customers.

These orders were not arbitrarily made by the War Production Board. They were given the job of providing materials for the war industries of our country, and it was very apparent that the metals that went into making our appliances and providing additional services for our customers could not be had as usual and at the same time have enough raw materials to put through the production of our plants and make the things that are necessary to prosecute the war. There just is not enough materials for both, and one must be sacrificed for the other.

In issuing these limitation orders it was the view of the War Production Board to take care of the health and sanitation of the American public. Gas appliances came under the appliance section of the Plumbing and Heating Branch of the War Production Board. Gas appliances for cooking and water heating have to do with the health of the nation and our customers. A method was provided in the orders for maintaining the appliances on our lines and securing and making the necessary repairs and, when appliances were worn out, destroyed or beyond repair, provision was made for the procurement of appliances to replace them. The appliance equipment cannot be replaced with superior equipment.

Provisions were also made in the orders to permit the sale of ranges, water heaters, space heaters and refrigeration equipment to those people who did not have any equipment available for these purposes.

These limitation orders issued by the War Production Board appeared very drastic to many appliance dealers and service organizations in our territory, and to our customers. Information with reference to these orders following the initial newspaper reports was slow in reaching the dealers and service organizations in smaller communities, and our customers themselves had little or no information regarding the orders and their provisions. Our company has undertaken to provide the dealers, dealer service organizations and our customers with the information concerning the limitation orders and interpretations of their provisions. This has been done through our advertising program and customer contact of all departments and employees of our local gas company organizations.

## Customer Service

In our organization, outside of Oklahoma, we have for many years operated a New Business Department. It has been the primary function of this department to maintain and improve our business through selling the customer the utmost in appliance conveniences and labor-saving devices, promotion and sale of new devices for the use of gas service, solicitation of new customers, seeing that appliances were properly serviced, and, in fact, doing everything possible to procure new and satisfied customers and increase the use of gas service. With the advent of the limitation orders restricting the free sale of appliances, it was decided to use our New Business Department in a wartime program of customer service. We have retained for this program experienced men who have been in the New Business Department of our organization for a period of years, as we feel they have very important duties to perform in the service rendered to our customers.

Under our wartime program the New Business representatives will continue to make house-to-house calls at the homes of customers for the purpose of keeping in contact with the customers' needs and assisting them in obtaining the greatest use of their appliances and gas service. We all know the slogan, that "Uncle Sam wants it to last." In making a survey of customers' premises these representatives make a record of appliances and note their condition. If essential repairs are needed to place the appliances in proper working order, an order is taken on the ground for the repair parts or they are told where same may be secured if available from a dealer who is handling the particular equipment.

It has been our policy to remove as much as possible the burden from the shoulders of the War Production Board in explaining to the customers the various limitation orders and assisting those customers who qualify to procure new equipment. We believe this is a vital service and one which we can and should render to our customers. We are endeavoring to keep our employees advised of the interpretations of the orders and the reasons behind them so they can intelligently answer the questions of our customers.

## Advertising Policy

Instead of telling the customer to write or phone or see the nearest War Production Board to find out why they cannot have a new gas range or water heater or new service line, we are endeavoring to give them the explanation. In our advertising we have endeavored to tell our customers of this service that we are prepared to render, and ask them to call us on any matter connected with appliances or gas service, and that we will advise them what can be done under the various orders. While the company representatives are in the customers' homes they endeavor to advise the customer on the proper care and use of their equipment. We have a slogan which is used extensively—"Take good care of your gas appliances and they will take good care of you." Training has been given to these men also to make minor gas-air adjustments to gas equipment if this is necessary.

Information is also given the customer of a nutrition program being carried out by the company, and attempt to briefly give the customer the principles of good cooking under wartime conditions.

## Replacements

You all know that the manufacturing of gas appliances has now stopped and the appliance manufacturing industry which has served us so well has now converted their plants to make war munitions. The only appliances now available to replace those that are worn out beyond repair, or for customers who qualify to purchase new appliances, are the stocks that are now in the hands of the dealers and utility companies of this country. It is planned under the various limitation orders to stretch out these stocks as far as possible. No one is eligible to buy any new appliance today merely for the purpose of modernization, if they have something that is still usable or repairable at the present time. In the territory in which we operate, outside of Oklahoma, where we are permitted to sell appliances, we are endeavoring to stretch out our stocks as far as possible, and under the limitation orders dealers are required to do likewise.

Donald M. Nelson, chairman of the War Production Board, in a recent address in Kansas City before the American Legion, stated that we are living on our fat of easy years but he expected that within another year our fat would be gone and we would be down to bone and muscle. He further stated that the requirements of war production will require cutting out the production of every single, solitary thing that we do not have to have to keep operating.

## Dealer Situation

The situation is generally developing where many fine dealers who have been actively selling gas appliances in the past are now being forced to close shop because appliances are no longer available to sell. In many of the smaller communities we find plumbing shops and appliance stores are closed. These dealers have sold a good many appliances in the past, and with the closing of these businesses and servicing shops, our customers are at a loss to know where to go for service. The obligation of servicing these appliances is one that I feel utility companies should assume, and we in our company are assuming it. If the dealer or service organization for any particular make of appliances in a community has ceased to exist, we will take the order for the repair parts, endeavor to secure same from the manufacturer, and install these parts by our service organization. We are rendering an essential service to our customers and from them we receive their grateful appreciation.

## Repair Parts

In Oklahoma legislation was passed in 1931 prohibiting public utility companies from engaging in the sale of merchandise. However, under the provisions of the Act, utility companies may sell and install any repair parts needed on appliances. The following is quoted from the statute:

> "Nothing herein shall be construed to prohibit any public service company from selling fuse plugs, electric light bulbs, outlet plugs, extension cords, or other repairs or equipment necessary to maintain continuity of service to any patron or patrons of such company."

As I have previously stated, the situation is developing where many fine dealers and appliance service organizations are ceasing to do business. Appliances are no longer available from the manufacturers for dealers to replenish their stocks, and sales and appliance service organizations particularly are closing shop for many reasons—loss of skilled men to the armed services and to war industries, and the inability of many smaller service shops to live on service alone. Under the provisions of the anti-merchandising act just recited, utility companies in Oklahoma are permitted to sell and install repair parts or equipment necessary for the maintenance and continuity of service to their customers. It appears that utility companies are the

one avenue that will remain through which customers can expect such appliance servicing.

It is appreciated that in this state the sales of appliances and servicing of same have long been considered a function of the dealer, and I am advancing the thought that consideration should now be given on the part of utility companies of Oklahoma to picking up the maintenance repair work on customer appliances as these service organizations cease to function. It is our view that with conditions now rapidly developing, regardless of the past policies of utility companies to avoid assuming appliance servicing, it will be necessary for them to assume this essential service to customers.

## Motor Equipment

The utility transportation problem has been discussed here today. Needless to say, every company is doing its utmost to conserve tires and motor equipment. In our service work we are endeavoring to route everything but emergency orders so they can be taken care of with the minimum travel for motor equipment, and economy of man power.

## Customer Service

It has long been the policy of our company to light customers' furnace equipment in the fall of the year. Although for years past we have made some effort to have our customers request early in September that we light their furnace pilots, turn on the gas and get ready for that first cold weather, a great many of our customers awaited the first cold weather and our local organizations were swamped with calls to light heating equipment. This year we have endeavored to avoid this situation and the high peak of light-up calls which we get on the first cold day.

During the latter part of August our local companies sent a letter to our heating customers, together with a return post card, explaining that due to the tire and truck situation plus a man-power shortage, it would be impossible to take care of them this fall as we had done in the past. The customer was requested to return the post card signifying when we could light his furnace so we could take care of it in connection with our routine service calls in the neighborhood. We have had a splendid response to this effort as I believe people are becoming more conscious of the necessity of the situation and are endeavoring to cooperate in many things that they have not done heretofore.

## Home Service Department

In addition to the customer service work now being done by our organization, we are utilizing to the fullest extent our Home Service Department organization in giving information to the women of the communities where we operate. No longer are our Home Service Departments holding demonstrations for the purpose of instructing women in the advantages of new gas appliances. Last November our Home Service Department entered into a program of cooperation with the national nutrition program in teaching the women how to better prepare food with the equipment that they now have in their homes. This is an educational proposition. Our slogan is "Keep Your Family Strong" and we have had a wonderful response to the things our Home Service Department is endeavoring to do. The care and use of present gas equipment is a part of the program which they are carrying out.

## Customer Relations

The response we have had from our customers to the wartime service program that we are endeavoring to carry out has been most favorable. The customers greatly appreciate the fact that we are taking an interest in their welfare, and the dollars we are now spending on this work will be repaid many times in better customer relations. It is our opinion that as new appliances get scarcer, and as the mortality increases among dealers and service organizations to take care of equipment now installed, utility companies will have to assume this service. Your customers will look to you for this service. By maintaining present appliances in good operating condition you are insuring yourselves of continued business and the good will of your customers, as it is through the customers appliances that gas fuel is utilized.

*Presented at the Gas Division Oklahoma Utilities Association, Oklahoma City, September 24, 1942.*

**Refractory Concrete:** A 24 page bulletin issued by Atlas Lumnite Cement Co., Chrysler Bldg., New York, describes the characteristics of their products and illustrates many applications for industrial operations. Information on refractory insulating concrete is also included.

REED'S 4 WHEEL
Razor Blade Pipe Cutters

IDEAL FOR ANY TRENCH OR OTHER CLOSE QUARTER JOBS

$5.46 F. O. B. ERIE

Capacity
½" to 2"
Weight 5 lbs.

The REED FOUR WHEEL Cutter operates with a short back and forth motion through only one-third of a circle. Each of the four wheels exerts the same pressure on the pipe, and all 4 therefore cut evenly and completely through the pipe at the same time.

Equipped with Reed special alloy RAZOR BLADE Wheels, which cut with remarkable ease, leave little burr, and have a long life of useful service.

A sample cutter for test and trial may be ordered on memorandum invoice, to be paid for if retained or returned for credit if unsatisfactory. Try it once, and you will use no other.

REED MFG. COMPANY
1436 W. 8th Street • ERIE, PA.

# ACCIDENT—
# Saboteur of Manpower

LED by business and industry, America is organizing the greatest counter-attack on accidents in all history. Faced by mounting casualties on the home front already exceeding those on the fighting front, the country is at last taking unified action to curb the sabotage of manpower by accident.

Since Pearl Harbor 85,000 persons in all have been killed by accident in the United States, 7,700,000 injured. Destruction of human material on this grand scale means something more than personal tragedy endlessly repeated. It means that 410,000,000 man-days of work have been lost. These man-days might better have been spent turning out tanks, planes, guns, ships and the thousand and one complementary materials of war.

Of these fatalities 42,000 were workers—at a time when manpower is the Nation's major non-military concern. Only one out of eight industrial establishments—there are 196,000 in all—is fully covered by a safety program. Even more alarming, three out of five workers injured were struck down not in line of duty at furnace, press or lathe, but off the job.

Whatever the background of our accident-experience, its end effects are a gross waste of skills, serious lapses of efficiency while replacements are trained, and steady impairment of morale. When the trend has reached a pitch where ten firms are required to keep careless Americans supplied with glass eyes and twenty-five more with crutches, the time is ripe to call a halt.

A halt has been called. The first move was made by the President of the United States, in a proclamation calling on the National Safety Council "to mobilize its nation-wide resources in leading a concerted and intensified campaign against accidents."

The National Safety Council had thirty years of invaluable experience to draw on. It had plenty of ideas for concrete action. It knew exactly what it would need in the way of increased staff and public cooperation. But to move into wartime high gear with a program big enough to meet the national accident crisis, money for an adequate emergency budget was needed.

At this point business and industry stepped to the fore. In a spirit of wartime public service, representative leaders decided to undertake the financing of the Council's biggest assignment, and organized the War Production Fund to Conserve Manpower. William A. Irvin, former president of the United States Steel Corporation, accepted the national chairmanship of the Fund, and Thomas W. Lamont of J. P. Morgan and Company became treasurer. A goal of $5,000,000 was agreed on, this sum to be raised from business and industry throughout the country.

A national committee of more than 600 members was formed, with an executive committee of 74—both made up of senior executives in nationally prominent firms. A preliminary canvass through the national connections of major companies has yielded above one million dollars in cash and nearly another in oral commitments. At present regional campaigns are getting under way in major industrial centers from coast to coast.

A typical comment on the Fund was made by Joseph A. Moore, president of the Moore Drydock Company of San Francisco, who said in a radio address:

"We have an enormous job to do, and we can't do it without the support and cooperation of business and industry. Accidents can and must be prevented if we are to mobilize this country for all-out war production. Industry can and must take the leadership in this movement. We are asking for the support of all business. It has been abundantly proved that safety pays off in money, in time and in war production."

The National Safety Council has worked out a very careful plan for putting the $5,000,000 to work. No radical departures from previous practice are contemplated. The general strategy will be to speed up the existing program, to get more coverage, more technical assistance in the field, and above all, more public cooperation in accident-prevention.

The National Safety Council has just entered into its thirty-first year. It is a private organization of 5483 members, some of these corporations, others private individuals, and of late years has operated on an annual budget of $1,000,000. The Council's finances are controlled by a non-paid board of trustees recruited from the management of leading corporations. President of the Council is Col. John Stilwell, who is vice-president of the Consolidated Edison Company of New York, and Ned A. Dearborn is executive vice-president and managing director, heading a staff of 144 members. Home offices are in Chicago.

In a recent address before the National Safety Congress, in Chicago, William A. Irvin, the Fund's national chairman, had this to say:

"In terms of its importance to the war effort, and in terms of its day-by-day social and economic significance to the Nation, the safety movement is ten times as important as many other movements that get ten times its public recognition and support."

Stiffened by this conviction, business and industry through the War Production Fund have started something that will almost certainly carry over into peacetime, and cannot help but initiate urgently needed disciplines guaranteeing greater wartime efficiency.

**INDUSTRIAL GAS BOILERS**
**GARMENT PRESS BOILERS**
100 lbs. ASME Code
¾ to 45 H.P.

**P. M. LATTNER MFG. CO.**
MAIN OFFICE
CEDAR RAPIDS, IOWA

### Fred Keune Stationed At Camp Wallace, Tex.

Fred Keune, Gas Sales Manager, Florida Power & Light Company, Miami, Fla., entered the army in September as a V. O. C., and is stationed at present at the Coast Artillery Training Center at Camp Wallace, Texas.

He was a member of the Southern Gas Association, Director of Florida-Georgia Gas Meters Association and member of the National Refrigeration Committee of American Gas Association.

# War Production Board

## Gas Limitation Orders Amended

Faced with possible shortage of both manufactured and natural gas in many parts of the country this winter, the War Production Board on November 13th tightened control over the delivery of gas by revising Limitation Order L-31 governing natural and mixed gas and Limitation Order L-174 governing manufactured gas.

Principal changes in the orders follow:

### L–31 Natural Gas

1. Restrictions on new deliveries of gas to non-residential customers are made nationwide. Previously the restrictions were limited to certain states. November 30 is set as the deadline date for the installation of equipment which may be served in the new territories which have been added to the order. Earlier deadline dates for territories covered by previous orders remain the same. After November 30, WPB approval must be obtained for all new non-residential deliveries, except in the case of replacement of existing equipment.

2. In the case of residential customers, the prohibition against new gas deliveries will apply after November 30 to all gas heating equipment. Heretofore this prohibition did not affect small unit heaters supplying less than 50 per cent of the heating requirements of the premises. In addition, the areas covered by the residential restrictions of the order have been enlarged to include portions of Arizona and New Mexico.

3. After November 30, the installation of gas equipment by both residential and non-residential consumers is prohibited if the delivery of gas for the operation of such equipment is not permitted under the order. This is intended to prevent a waste of critical materials in the installation of gas equipment which cannot be served because of a limited gas supply.

4. The schedule of curtailment to be followed by gas companies during anticipated shortages is in general continued but is made more detailed. The purpose of the curtailment schedule is to protect war producers and essential civilian services in time of shortage. Whenever necessary, the Director General for Operation is authorized to require gas companies to curtail deliveries to residential consumers.

### L–174 – Manufactured Gas

L-174, which governs the production and distribution of manufactured gas, has been amended to conform closely to the new provision of the natural gas order. The principal change is to prohibit the installation of gas equipment in cases where delivery of gas to such equipment is prohibited under the order. In addition, the amendment provides for the submission to WPB of curtailment schedules in advance of anticipated shortages.

[*The complete text of the amendments to Orders L-174 and L-31 is too long to publish here in full owing to space limitations. We recommend that any utilities that have not received the complete text write to W.P.B. in Washington for copies.—Ed.*]

## Part 933 – Copper

Section 933.15 *Supplementary Conservation Order M-9-c-4* is hereby amended so as to read as follows:

(9) "To install in or connect to a structure or system" means to attach or build material to or into a building or other structure for plumbing or heating use, or to or into a water tower, water supply or water distribution system or installation; but does not mean to attach or build material to or into a machine such as a heater, refrigerator or other device (except a cooling tower or water tower) which itself has been or may be attached to or built into the structure or to or into an industrial processing system.

(b) **Restrictions on installation.** Notwithstanding any contract or agreement to the contrary or the receipt of any preference rating, on and after October 27, 1942, no person shall install in or connect to a structure or system any copper or copper base alloy pipe, tubing, fittings or building material, except that:

(1) Any person may install in or connect to a structure or system any copper or copper base alloy pipe, tubing or building material in an aggregate amount not in excess of 25 pounds for each necessary repair of a structure or system, provided that such pipe, tubing or building material is used to repair or replace copper or copper base alloy pipe, tubing or building material and provided that such pipe, tubing or building material was, on or before October 26, 1942, in the possession of the person owning the structure or system; and

(2) Any person may connect for purposes of repair and maintenance copper or copper base alloy fittings to copper water tubing already installed; and any person may connect for any purpose copper or copper base alloy fittings to a water supply or distribution system outside of a building; and

(3) Any person may install in or connect to a structure or system any copper or copper base alloy pipe, tubing, fittings or building material purchased by or for the account of the Army or Navy of the United States, the United States Maritime Commission, the War Shipping Administration, the Coast Guard or the Panama Canal: *Provided, however,* That nothing in this order shall supersede any applicable instructions to any officers of the foregoing, including without limitation the directive for War Time Construction dated May 20, 1942, issued by the Chairman of the War Production Board, the Secretary of War and the Secretary of the Navy or of the List of Prohibited Items for Construction Work dated April 1, 1942, issued by the Army and Navy Munitions Board, as amended from time to time; and

(4) Any person may install in or connect to a structure or system any copper or copper base alloy pipe, tubing, fittings or building material (i) upon the written authorization of the Director General for Operations given under this order authorizing the specific installation, or (ii) pursuant to a specific authorization, or preference rating certificate or order constituting authorization, to begin construction pursuant to the provisions of Conservation Order L-41, as amended from time to time. Application for this order may be made by letter setting forth the reasons why the person believes such material should be installed in or connected to a building.

(c) **Restrictions on delivery.** Notwithstanding any contract or agreement to the contrary or the receipt of any preference rating other than one described, on and after October 27, 1942, no person shall deliver, sell or otherwise dispose of any copper or copper base alloy pipe, tubing fittings or building material for the purpose of installing them in or connecting them to a structure or system (as such operations are defined in paragraph (9) of this order) otherwise than as permitted by subparagraphs (b) (2), (3) and (4) of

this order; and no person shall accept delivery or a transfer of such pipe, tubing, fittings or building material or purchase such pipe, tubing, fittings or building material unless the person making the delivery, sale or other disposition was permitted to do so. The foregoing shall not prevent;

(1) Delivery, sale or disposal to, or acceptance of delivery or transfer by or purchase by, a scrap dealer or a brass mill; or

(2) Delivery, sale or disposal to, or acceptance of delivery or transfer by or purchase by, Defense Supplies Corporation, Metals Reserve Company or any other corporation organized under section 5 of the Reconstruction Finance Act as amended (except Defense Plant Corporation); or any person acting as agent for any such corporation (except Defense Plant Corporation); or

(3) Delivery, sale or disposal to, or acceptance of delivery or transfer by or purchase by, any person of any copper or copper base alloy pipe, tubing, fittings or building material upon the written authorization of the Director General for Operations given under this order authorizing the specific delivery, sale or disposal, or pursuant to a specific authorization, or preference rating certificate or order constituting authorization, to the person accepting delivery or transfer or making the purchase, to begin construction pursuant to the provisions of Conservation Order L-41 as amended from time to time. Applications for authorization under this order may be made by the person seeking to make delivery, sale or disposal, by letter setting forth the reasons why the person believes such material should be delivered, sold or otherwise disposed of.

(d) **Communications for the War Production Board.** All requests for authorizations and communications referring to this order, shall, unless otherwise directed, be addressed to: War Production Board, Copper Branch, Washington, D. C., Ref: M-9-c-4.

## AA–1 for Essential Maintenance

Pointing up the importance of keeping the nation's civilian economy in a healthy condition, the Requirements Committee of the War Production Board on Nov. 11th authorized that the top priority rating of AA-1 may be applied to essential repair and maintenance.

Included in the scope of the determination, which becomes a basic policy for the first quarter of 1943, are essential repairs and maintenance for productive facilities, utilities, housing and consumers' durable goods.

The action will make it possible for vital plants and factories, mines and refineries and other industrial facilities to continue effective production of both munitions of war and essential civilian goods. Communication and transportation systems, gas, oil and water lines and other services will be assured of materials to keep them performing their essential functions. Supplies and materials needed for essential maintenance and repair for housing also may be obtained.

Until the Controlled Materials Plan goes into full operation, the existing priorities system will be used to obtain the steel, copper and aluminum needed for such maintenance and repair. Under CMP each agency will break down its material requirements three ways: into that needed for production, construction and facilities and maintenance and repair.

By including maintenance and repair requirements in the over-all materials program, CMP provides a long-range assurance that the nation's essential industries will be kept in operation.

## Production of Cast Iron Boilers Limited

Production of low pressure cast iron boilers built to use exclusively oil or exclusively gas for fuel was prohibited by the War Production Board, Nov. 7th. Production of other cast iron boilers is prohibited unless they are used for essential purposes.

Order L-187, defines a low pressure cast iron boiler as one designed for hot water or steam heating operated at a maximum working pressure of 15 pounds per square inch for steam, or 30 pounds per square inch for water.

This type of boiler is widely used both for industrial and domestic heating plants.

Boilers not using exclusively oil or exclusively gas for fuel can be produced only for specified military purposes, or for use in hospitals already constructed or to be constructed in the future. Both of these permitted uses are subject to authorization of the Director General for Operations on PD-704.

Production of repair and replacement parts for any cast iron boiler is not restricted by today's action.

Manufacture of boilers using exclusively gas or exclusively oil was prohibited because of the impossibility of converting these to operate with other fuels.

## O. P. A.

### Common carriers, other public utilities must notify OPA 30 days before raising rates

The form and substance of the notice of proposed general increases in rates and charges of common carriers and other public utilities, as provided for in the Emergency Price Control

**SUPERIOR GAS METERS**

**For Sound Values and Continuous Operating Economy**

**Meters for Domestic and Industrial Use. All Sizes 5B to 60C.**
**Wet Test and Demonstration Meters — Diaphragms —**
**Service Cleaners — Provers — Meter Repairs**

**Write for details and quotations**

**SUPERIOR METER COMPANY, INC.**

***167 41st Street*** ***Brooklyn, N. Y.***

Act as amended, were set forth November 13, by the OPA.

All increases in common carrier or other public utility rates or charges which affect a class of passengers, shippers, or customers as distinguished from an increase chargeable to a particular customer or transportation service under special arrangement were defined as "general rate increases." The Act requires that OPA be notified 30 days before any such "general rate increase" can go into effect.

The definition is contained in Procedural Regulation No. 11 effective November 12 which specifies the form and manner in which common carriers and other public utilities must notify Price Administrator Henderson of proposed increases in rates under the Emergency Price Control Act, as amended by the Act of October 2, 1942.

The November 13 order specifies that 30 days before any rate increase goes into effect there shall be filed with the transportation and utilities division of the OPA in Washington two copies of the notice.

The order further specifies that if authority of any regulatory body is required for establishment of the increased rates, the Price Administrator shall be notified on or before the time such authority is sought by the common carrier or public utility so that he may intervene in the proceedings.

## Thermostats banned for home cook stove

Thermostats are added to the proscribed list of accessories to domestic cooking appliances by Amendment No. 3 to Supplementary General Limitation Order L-23c, which controls manufacture of household cooking stoves.

By the terms of the amendment announced October 28, they may not be attached to cooking stoves after December 25.

## Limitation Order L-123 Amended

Purchase orders for necessary repair and maintenance parts for many items of general industrial equipment must be accompanied by a certificate, reciting the nature of the purchase, in accordance with an amended order issued Nov. 25th by the Director General for Operations.

*Non-applicability to repair or maintenance.* (1) The provisions shall not apply to any order for, or delivery of, maintenance or repair parts, (i) in an amount not exceeding $1,000 for any single piece of general industrial equipment to be repaired or maintained; or (ii) in any amount for the repair of general industrial equipment when there is an actual breakdown or suspension of operations of such piece of equipment because of damage, wear and tear, destruction or failure of parts, or the like, and the essential repair or maintenance parts are not otherwise available.

Any purchaser who shall place an order for repair or maintenance parts exempted from the provisions as above provided, shall furnish his supplier with the following certification, on the order or in a separate document:

I hereby certify that the above (or attached) order is in compliance with paragraph (c) of General Limitation Order L-123. The order is for maintenance and repair parts as follows:

.....

(state here whether order is for parts not exceeding $1,000 for each piece of equipment coverd thereby, or for parts for equipment which has broken down)

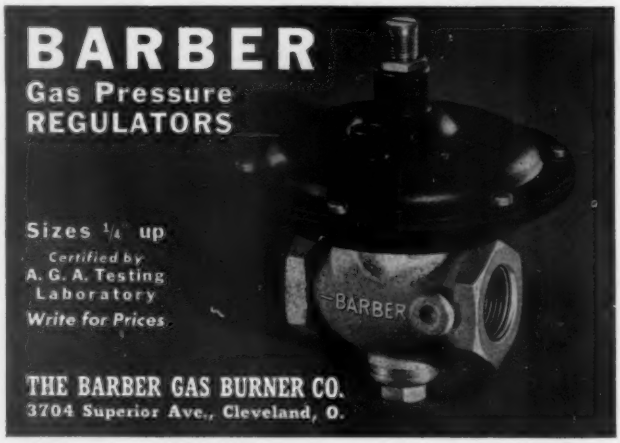
..... Company

By .....

(Authorized official)

*(Continued on page 44)*

A Finer Place to Stay
FORT MEIGS
HOTEL
The superiority of Fort Meigs Hotel is attested to by experienced travelers who appreciate its beautiful, comfortable accommodations and reasonable rates. Purple Cow Coffee Shop and Maritime Buffet serve the best food in Ohio.
EDWARD SHERMAN, Manager
St. Clair between Madison & Jefferson
TOLEDO
ONE OF THE ALBERT PICK HOTELS
400 ROOMS
WITH BATH
from $2.50

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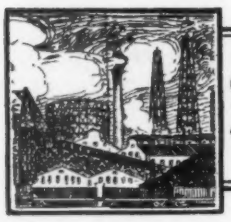


# News of the Gas Industry

## Unveils Tablet to Fighting Employees

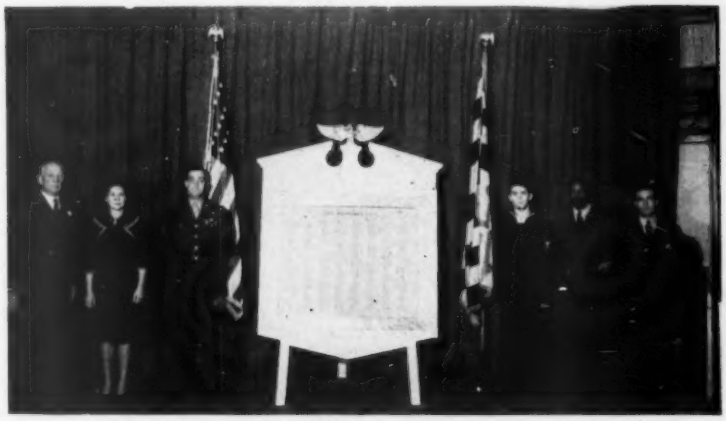
The Consolidated Gas Electric Light and Power Co., Baltimore, Md., unveiled a tablet on Nov. 17, at the office of the company, bearing the names of 638 employees now serving with the armed forces.

In addressing the assembled representatives of the various departments, Charles M. Cohn, President of the Company said that the tablet had not been labeled "honor roll" because he felt that although the greatest honor was due those in the service, all of the employees of the company were fighting for their country.

"Those who are serving on the production line at home to keep the country's war machine rolling," he said, "are carrying on the fight as truly as those in the front lines."

The tablet, which will stand in the entrance hall of the Lexington Building, was designed by J. Frederick Panetti, display supervisor of the company, and was made in the company's own shops.

Of the company's 5,100 employes, one out of eight is now serving in the armed forces.



Left to Right—Charles M. Cohn, President, Miss Edna T. Gaynor, Baltimore Gas & Electric Association; Sergt. R. D. Bissell, Yeoman Herbert Wright, James Barton, Baltimore Gas & Electric Association Branch; J. Russell Schulties, Baltimore Gas & Electric Association.

## Ranney Elected Trustee of University of Chicago

Election of George A. Ranney to the Board of Trustees of the University of Chicago was announced November 12th by Harold H. Swift, chairman of the Board.

Mr. Ranney has been chairman of the Peoples Gas Light and Coke Company since 1935. He entered the utility field in 1933, when he became vice-chairman and director of the Commonwealth Edison Company, Peoples Gas Light and Coke Company, and the Public Service Company of Northern Illinois. Previously, he had been vice-president in charge of sales of the International Harvester Company.

He is a director of the International Harvester Company, The First National Bank of Chicago, Westinghouse Electric and Manufacturing Company, Westinghouse Electric International Company, and the New York Central Railroad.

## State of Michigan Utilities Valued at $697,847,323

Public utility property in Michigan is assessed at $697,847,323, including $353,222,573 assessed locally, the State Tax Commission reported after a statewide survey.

"Thus the assessed valuation of private utility property is approximately 10 per cent of the total assessment of property subject to ad valorem taxes in Michigan" the commission said.

The compilation of local assessments against utilities was the first ever made. Commission members pointed out that the local assessments showed a "wide variation in the amount and relative importance," of the utility valuations in the 83 counties.

"As would normally be expected, Wayne County, with a total of $166,098,514, has the largest share of the total locally assessed utility valuation," the commission said. "Luce County has an assessment of only $6,230 on this class of property.

"Utility valuations as a percentage of total assessed valuations vary from .13 per cent in Luce County to a peak of 34.14 per cent in Oscoda County. The average for all counties is 5.28 per cent.

"There are also great variations in the per capita utility valuations among the counties. Whereas the average for the state as a whole is $66.51 per capita, individual per capita figures range from 84 cents in Luce County to $310.34 in Iosco County."

The report showed the locally assessed total included $349,573,387 on gas and electric utilities and $3,649,186 on pipe lines for gas or oil. Utility valuations in general are 5.28 per cent of total city or township valuations.

## H. D. Borger Elected Treasurer of Peoples Natural Gas Co.

H. D. Borger, formerly assistant treasurer of the Peoples Natural Gas Company, has been elected treasurer and director, the board of directors of the company announced recently.

Mr. Borger succeeds the late Sidney J. Ratcliffe, who died in September of this year. He is a brother of Edward M. Borger, president of Peoples Natural Gas Company, who last week left on a leave of absence to join the American Field Service abroad as an ambulance driver.

H. D. Borger started with the company in 1922 as an office boy. He rose through various positions in the accounting department and was made assistant treasurer in 1934. He was born in Edgewood, reared in Sewickley and now lives in Ben Avon Heights.

**THE STACEY MANUFACTURING CO.**

**Engineers Fabricators Constructors**

• **Gas Holders** • **Gas Plant Equipment** • **Steel Plate Construction** •

**GAS HOLDER INSPECTION SERVICE**

**Cincinnati — Ohio**

**91**

**STACEY** SINCE 1851

**Years**

## R. H. Tapscott, Chief Executive Officer of Consolidated Edison Co., New York

Trustees of Consolidated Edison Company of New York, Inc., Nov. 24th named Ralph H. Tapscott, the company's president, as its chief executive officer, thereby succeeding to the responsibilities held by the late Floyd L. Carlisle. Oscar H. Fogg, vice-chairman of the board, was elected to the newly created post of chairman of the executive committee. The offices of chairman and vice-chairman of the board were abolished. The board indicated that in all other respects Mr. Tapscott and Mr. Fogg would perform their respective duties as heretofore.

Ralph H. Tapscott

Similar action was taken by the boards of directors of the other System Companies, of which the late Mr. Carlisle served as chairman, namely, Brooklyn Edison Company, Inc., and New York and Queens Electric Light and Power Company.

Mr. Tapscott was elected president of Consolidated Edison Company in March, 1937. He was born in Brooklyn August 31, 1885. After preliminary education at Erasmus Hall Academy and Boys' High School, he went into the leather business but left this two years later to attend Union College, from which he was graduated in 1909 with the degree of B.S. in electrical engineering.

In October, 1917, Mr. Tapscott became assistant chief electrical engineer of The New York Edison Company, one of the predecessors of Consolidated Edison; in 1925 he was made electrical engineer and seven years later vice-president of that company and of The United Electric Light and Power Company. He became vice-president of Consolidated Edison Company in 1936 upon the merger of those companies into the parent company.

Mr. Fogg entered the gas industry with the United Gas Improvement Company in Philadelphia where he was born. He came to Consolidated Gas Company in 1904 in its Department of Mains and Services, and later studied gas utilization in this country and Europe. In 1917 he joined the Army and was placed in command of the construction and maintenance divisions of the Ordnance Department, A.E.F., with the rank of Lieutenant Colonel. The French Government gave him the Ordre de l'Etoile Noire and the United States Government gave him the Distinguished Service Medal. In 1924 Mr. Fogg was elected vice-president of Consolidated Gas Company in charge of commercial relations, customers' service and utilization; in 1935, executive vice-president of Consolidated Gas Company, and in 1937, vice-chairman of the board of Consolidated Edison Company.

## A.G.A. Committee on National Advertising

H. Carl Wolf, Chairman of the Committee on National Advertising of the American Gas Association, has announced the following appointments to his Committee:

D. P. Hartson, vice-president and general manager, Equitable Gas Company, Pittsburgh, representing participating companies in Western Pennsylvania, Ohio and West Virginia.

Dean H. Mitchell, president, Northern Indiana Public Service Co., Hammond, representing participating companies in Illinois, Iowa, Michigan, Wisconsin, North Dakota, South Dakota, Indiana and Minnesota.

H. P. J. Steinmetz, vice-president in charge of sales, Public Service Electric & Gas Co., Newark, representing participating companies in New Jersey.

Fred B. Hofft, vice-president, The United Gas Improvement Co., Philadelphia, representing participating companies in Eastern Pennsylvania and Delaware.

Mr. Wolf also announced that Will C. Grant, advertising director of the Lone Star Gas System, Dallas, has been appointed a member of the national advertising copy committee, succeeding Willard G. Wiegel, who has been appointed personnel manager of that company.

## Controllers Institute of America

Edmond A. Freddo, chief accountant of the Kings County Lighting Company, Brooklyn, N. Y., and Warren H. Keller, controller of the United Light & Power Service Company, Chicago, have been elected to membership in the Controllers Institute of America, a technical and professional organization of controllers devoted to improvement of controllership procedure, having offices at 1 East 42nd Street, New York.

Weldon M. Pagett, assistant secretary of the Pan American Gas Company, and Lloyd V. Tracht, assistant secretary and assistant treasurer of the United Gas Corporation, both of Houston, Texas, have also been elected to membership.

## Mary E. Dillon, Appointed Member, Board of Education

Miss Mary E. Dillon, President of the Brooklyn Borough Gas Co., Brooklyn, N. Y., has been appointed a member of the Board of Education of New York City.

Miss Dillon has been active in the business, civic and charitable life of her borough for many years. She is a director and past vice-president of the Brooklyn Chamber of Commerce; a member of the Brooklyn advisory board of the City Planning Commission, and of the Mayor's Business Advisory Committee; a director of the Brooklyn chapter of the American Red Cross, and a member of the Brooklyn Defense Recreation Committee and the executive committee of the New York Defense Recreation Committee.

Mary E. Dillon

For many years she has been a member of Local School Board 39, in Brooklyn. She also is a director of the Park Association of New York and of the Coney Island Chamber of Commerce, and a member of the governing committee of the Brooklyn Institute of Arts and Sciences.

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# Obituary

## FLOYD L. CARLISLE

Floyd L. Carlisle, Chairman of the Board of Consolidated Edison Company of New York, Inc., and of Niagara Hudson Power Corporation, died November 9th at the North Shore Hospital, Glen Cove, of an embolism. He was 61 years old.

Mr. Carlisle was born in Watertown, New York. His preliminary education was received in the public schools of Watertown and Dayton, Ohio. In 1903 he graduated from Cornell University, where he studied law.

Mr. Carlisle was admitted to the New York State Bar in 1905, after studying law in the office of Brown, Carlisle and Hugo at Watertown, of which his brother, John N. Carlisle, was a partner. For several years thereafter he practiced as a member of that firm which later became Carlisle & Carlisle.

Floyd L. Carlisle

His first business venture was the organization of the Northern New York Trust Company at Watertown, formed by the merger of two banks into one of the first trust companies in northern New York. Mr. Carlisle served as president of this bank from the time of its organization in 1910 until 1922.

In 1916 Mr. Carlisle headed a group of business men who purchased control of the St. Regis Paper Company. He served first as assistant treasurer of this company and later as president. Mr. Carlisle had retained his interest in the St. Regis Paper Company throughout the years and was chairman of the board.

He entered the public utility field in 1920, heading a syndicate which bought the Northern New York Utilities, Inc., the largest public utility operating company in the northern New York region and became the chairman of the board of directors. In 1921 he came to New York to establish the firm of F. L. Carlisle & Co., Inc., which conducted an investment banking business up to 1934.

In 1926, under Mr. Carlisle's direction, the Northeastern Power Corporation was organized. This company took over control of the Northern New York power properties and in addition acquired a substantial interest in the New England Power Association and Mohawk Hudson Power Corporation. In 1928 the Northeastern holdings in New England Power Association were sold and Mr. Carlisle relinquished his position as chairman of the board of directors of that company.

He played a prominent part in the formation of Niagara Hudson Power Corporation in 1929, becoming chairman of the board of directors. From April 1930 until December 1933 he was a director of the National City Bank.

His first connection with the Consolidated Edison group came with his election as a director of the New York Edison Company in May, 1930. In February 1931 he was made chairman of the board of directors of New York Edison. In May 1930 he was elected a trustee and in February 1932 chairman of the board of Consolidated Gas Company of New York, which later became the present Consolidated Edison Company of New York. Mr. Carlisle was the guiding figure in the series of mergers of subsidiary companies into Consolidated Edison, which resulted in a greatly simplified corporate structure.

## FRANCIS H. PAYNE

Francis Hervey Payne, President of American Meter Company, and Manager of the Corporation's Metric Metal Works Plant at Erie, Pa., died suddenly at 7:30 P.M., Tuesday, November 10, 1942, while attending the monthly meeting of the Men's Club at St. Paul's Church, Erie, Pa. He was in his seventy-fifth year.

Mr. Payne was born April 1, 1868 at Petroleum Center, Venango County, Pa., where his father, the late Calvin N. Payne, was engaged in drilling for oil and built the first natural gas pipe line in America.

Francis Payne was a graduate of the Titusville High School, the Hill School of Pottstown, Pa., and of Princeton University, Class of 1891.

F. H. Payne

His advent in the gas meter business was in July, 1891, when he became Secretary and Manager of the Metric Metal Company then at Beaver Falls, Pa.

Mr. Payne enjoyed an unbroken record of almost fifty-two years as Manager of this important operating factory, which became a part of American Meter Company when that Company was organized in 1895.

He was a Director of this Corporation for many years prior to his election as Vice President in 1923, and as President in June, 1936.

Mr. Payne had an active interest in the civic affairs of his home community, and at the time of his death, he was a Director of the American Gas Association, the Erie Chamber of Commerce, and the Erie County Health & Tuberculosis Assn., and President of the Board of Library Trustees, Erie, Pa.

He was a Director of the First National Bank of Erie for many years, and Chairman of the Board of the National Bank and Trust Co.

Important manufacturing history in the measurement of gas and oil was made during Mr. Payne's many years of management of the Metric Metal Works plant. In 1891, tinned steelcase gas meters, extensively used throughout the United States since 1836, were first made from dies. High pressure ironcase meters were also developed and improved from 1888 until the present. In 1916, Ballard Westcott orifice meters were developed. This principle of orifice measurement is extensively used in recording the large volume flow of gases and liquids in the Gas and Petro-Chemical Industries.

## WILLIAM J. HINCHEY

William J. Hinchey, General Manager, of the Kentucky Natural Gas Co., died suddenly November 1st at Owensboro, Ky., at the age of 62.

W. J. Hinchey

He was born at Bradford, Pa., where he started his career in the gas business, in May 1898, with the Commercial Gas company at Bradford, Penna., doing general service work. Eight years later he was transferred to the United Natural Gas Pipe Line company, also of Bradford, doing the pipe line and compressor station construction work for two years. He remained with the company in the capacity of Chief Inspector of all the properties in the Kansas City district until 1922.

In the fall of 1908 he accepted a posi-

tion with the Kansas Natural Gas company at Independence, Kansas, as a chief inspector of pipe lines and distribution systems. This company was later taken over by the Cities Service company.

In that same year, on August 31, 1922, he married Margaret Theis of Pittsburg, Kansas, and became associated with the Union Public Service company as General Superintendent of the company's twenty-eight natural gas distribution properties in Kansas, Missouri and Oklahoma.

In 1923 the Union Public Service company was purchased by the Henry L. Doherty company and was operated with others under the management of the Gas Service company, a subsidiary of Cities Service company. Mr. Hinchey served in the capacity of general superintendent over all the distribution properties of the Gas Service company, with headquarters at Kansas City, Missouri, until 1929.

He resigned then to join the Missouri Kansas Pipe Line company, taking up his headquarters at Owensboro, as vice president and general manager of the Kentucky Natural Gas company. A few years later the company was purchased and reorganized as the Kentucky Natural Gas corporation, with which he had since remained as vice president and general manager, thus completing forty-four years service in the natural gas business.

## WALTER S. WYMAN

Walter Scott Wyman, who built the Central Maine Power Company from a $1,500-a-year business to a $7,000,000-a-year corporation, died Nov. 15th of a heart attack in the midst of negotiations for a $113,000,000 utility merger of which he was to be president. He was sixty-eight years old.

Mr. Wyman, born at Oakland, Me., began his business career as assistant superintendent of the Maine Water Company in 1899, served briefly as general manager of the Waterville, Fairfield and Oakland Railroad, and established his light and power business in 1901 under the name of the Messalonskee Electric Company. The name was changed in 1910 to its present title.

Mr. Wyman had been a party to numerous utility and manufacturing company mergers and developments. The current negotiations to bring the Cumberland Light & Power Company and the Central Maine Power Company together would have been his largest operation. The firms are the two largest utilities of the state. He was president of both.

## PAUL R. JONES

Paul Robertson Jones, director and secretary of the Cities Service Company, 60 Wall Street, since it was organized in 1910, and an officer of many other utility corporations, died November 10th at New York Hospital, 525 East Sixty-eighth Street. He was sixty-six years old.

Mr. Jones was born in Cincinnati. At the age of twenty-three he started work as a lamp boy for the Denver Electric Light Company where his job was to change the burned-out carbon lamps then in use. He rose to stenographer and bookkeeper and a few years later was sent to Lincoln, Neb., to organize an accounting system there for the Lincoln Gas and Electric Company. He later became secretary of that company.

When the Cities Service Company was organized, Mr. Jones was named secretary, a position he held until his death. He was also chief auditor in charge of all accounting for the organization, which called for his traveling from 30,000 to 40,000 miles a year through the United States.

## BENNET B. BRISTOL

Mr. Bennet B. Bristol, who with his brother Edgar H. Bristol founded the Industrial Instrument Company, in 1908, which later became The Foxboro Company, died at his summer home at Falmouth Heights, Mass., on Tuesday, November 10th, following several months' rest from a heart attack, suffered last May. Mr. Bristol was born in Naugatuck, Conn., May 3, 1868. In 1893 he was graduated, M.E., from the Stevens Institute of Technology. Throughout the history of The Foxboro Company he served as its Treasurer and Clerk. He was President of the Foxboro National Bank, a director of the Citizens and Manufacturers National Bank of Waterbury, Conn., and Chairman of the Board of Trustees of the Foxboro State Hospital.

## Gas Burning Equipment Standards

Two American Standards, one governing requirements for installation of gas-burning equipment in power boilers (ASA No.: Z21.33-1942), and the other governing listing requirements for gas valves (ASA No.: Z21.15-1942) have been approved by the American Standards Association. The first of these standards, which were developed under the leadership of the American Gas Association, covers such requirements as installation of burners and controls; gas piping and meters; inspections and tests; as well as boiler room ventilation, accessibility for cleaning and inspection, and flues and flue connections.

The approved Standard listing requirements for gas valves include such construction requirements as dimensions, compensation for wear; valve stems and handles; stops; latching type valves; strength; materials; assembly and marking; and such performance requirements as leakage; capacity; gas range burner valves with adjustable orifices, and continued operation. Review copies of these Standards available on request.

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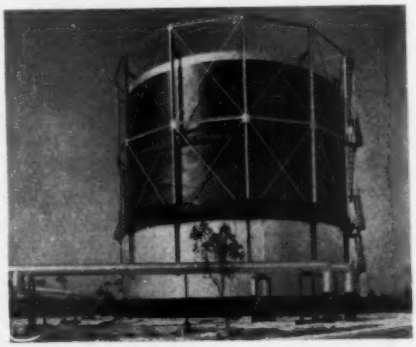
## Welding Award Study of Gas Holder Shows Large Savings

Shown here is a welded gas holder which was redesigned from riveted construction and described in a paper for which the author, Rudolph Kraus, welding engineer, Stacey Brothers Gas Comstruction Company, Cincinnati, Ohio, received an award of $100 in the 2½-year $200,000 welding study program sponsored by The James F. Lincoln Arc Welding Foundation, Cleveland, Ohio.



Electric Welded Gas Holder

The new design replaces the courses between the handing rows of the cup and grip plates with panels. Doing away with the horizontal laps offered the possibility to weld the stiffeners directly to the panels. The nominal dimensions of welded cups and grips were better maintained than it was possible with riveted cups and grips of equally large dimensions.

The fabricating cost of welded holders is about 25% less, compared with what the present-day cost of riveted holders would be.

## Wm. Reynolds Joins Staff of Elastic Stop Nut Corpn.

William Reynolds, of New York, has been appointed advertising and public relations manager of the Elastic Stop Nut Corporation, Union, N. J., manufacturers of self-locking nuts, it was announced recently by Thomas H. Corpe, general sales manager of the company.

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### Director Robertshaw Research Laboratory to Serve WPB

S. G. Eskin, Director of the Robertshaw Research Laboratory, has received his formal appointment from Donald M. Nelson to serve as a "dollar-a-year" man on the War Production Board. Mr. Eakin has been assigned to the Industrial Conservation section headed by Mr. Lessing Rosenwald and in the Specifications Branch.

Charles K. Strobel has been appointed Assistant Director of the Robertshaw Research Laboratory to carry on the comprehensive research program under way. Mr. Strobel became a member of the Robertshaw Thermostat Company's Research Laboratory in September 1940.

He has a broad background of experience, having spent two years in the Development Laboratory of the Western Electric Co., New York, and nine years in the Research Laboratory of the Union Switch and Signal Company, Swissvale, Pa. He also spent five years on individual research for Westinghouse E & M Co. and University of Pittsburgh.

### International Acetylene Assn.

Newly elected officers of the International Acetylene Association, chosen at the annual meeting held in Cleveland, Ohio, on October 14, 1942, are: Ellsworth L. Mills, president; Gleen O. Carter, vice-president; Herbert F. Reinhard, secretary; and Philip Kearny, treasurer.

## Manufactured Gas Under War Conditions

*(Continued from page 12)*

have been installed without the knowledge of the gas company.

Some measure of relief from these problems is obtained by another War Production Order, L-79. This Order restricts the sale of new space heating equipment unless the purchaser has a preference rating of A-10 or better. But the Order provides an exception for residential equipment under certain conditions.

Additional help has been provided by the Plumbing and Heating Branch of the War Production Board which has limited the production of space heating equipment to fabricated materials already in stock. Furthermore, an attempt is being made to direct stocks of space heating equipment exclusively to distributors in those areas where an ample supply of gas is available.

The very large number of applications for exemption from the provisions of Order L-174 has contributed to the difficulties of administration. Until recently each consumer who applied for service to his local gas company has had to write directly to the War Production Board. Such requests have typically contained inadequate information and have frequently been addressed to the wrong person. A form is now being prepared which will provide for the consolidation of such applications by the local gas companies who will then forward them to the War Production Board with all of the necessary information. This should aid in reducing the mechanical motions and the lost time resulting from the previous method.

Amendment No. 1 to Order L-174 also effects a revision in Exhibit "A" so as to include additional goods and services essential to the war economy and the civilian economy. The relationship between paragraphs (d) and (e) of the Order are clarified. All restrictions on deliveries of manufactured gas to non-residential consumers (including space-heating deliveries) are governed exclusively by Section (d). Section (e) governs only space-heating deliveries to residential consumers.

The Section of the Order which deals with curtailment has been revised to provide a more specific program as follows:

**(a) A provision has been added which permits curtailment of deliveries without regard to schedules in the event of an emergency shortage.**

**(b) War production and essential civilian services with interruptible contracts are to be curtailed only to the extent that fuel requirements for such services can be supplied by standby facilities.**

**(c) In the event of a gas shortage, deliveries to commercial and industrial consumers are to be made on a proportionate basis except to war production or essential civilian services.**

**(d) If further reductions in deliveries are necessary they shall be made on a uniform proportionate basis to war production and essential civilian services as far as practicable.**

**(e) The amendment further provides that the Director General may order reductions in deliveries to residential consumers.**

**(f) A provision has been added to require utilities to file in advance proposed curtailment schedules for review and approval by the War Production Board.**

Because of the war, the Manufactured Gas Industry must readjust its business in order to most effectively serve its respective communities with gas for war purposes and for essential civilian services. The Government through the War Production Board, has given the utilities authority to effect these readjustments. You in the industry of course realize the difficulties involved in reconciling the diverse conditions obtaining among the large number of utilities in the country and of making all of them fit an order which must be generally applicable. It is essential that utility personnel be acquainted not only with the objectives and spirit of the Order but also with the causes and reasons for its existence. Such understanding should evoke the kind of enlightened assistance which will enable the manufactured gas industry to serve the country with the greatest effectiveness.

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*Presented at the Annual Meeting of the Mid-Southeastern Gas Association, North Carolina State College, Raleigh, North Carolina, November 13, 1942.*

## Gasoline for Gas Making

*(Continued from page 31)*

Briefly, the above data indicates the following:

1. Raw gasoline can be successfully gasified in a carburetted water gas machine.
2. These tests indicated a cracking temperature of about 1450° F. as the best for Fond du Lac. It is believed that with a standard three shell machine a higher temperature will be required. For any given machine, the proper temperature should be determined experimentally.
3. The set capacity is approximately the same with gasoline as with the oils normally used in the manufacture of carburetted water gas.
4. Higher fuel cracking efficiencies can be obtained by the use of gasoline.
5. The tar produced from gasoline is materially less than from the oils normally used.
6. The main problem in the use of gasoline is handling and storage, including state and local regulations.
7. With the present price and tax structure, it is not economical to use gasoline. Action should be started to have the 1½c Federal tax law changed so that it will not apply on gasoline used for gas making purposes, since it would be used to release fuel oils and gas oils which are badly needed by war industries which are unable to convert to gasoline.

Based on current costs of gasoline, the Fond du Lac test, including Federal tax, ran slightly over 8c per MCF, in excess of costs using Fuel oil at present market price. This is exclusive of tar credits which would increase the differential still further.

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## Limitation Order L-123

*(Continued from page 38)*

Such certification shall be signed by a duly authorized official or employee of the purchaser. No person shall make delivery of repair or maintenance parts covered by such certificate if he has reason to believe that the certificate is false; and no person shall falsely furnish the certification specified above. The above mentioned certificate shall constitute a representation to the War Production Board, as well as to the supplier, of the facts certified therein.

(d) *Applicability of Priorities Regulation No. 1.* This order and all transactions affected thereby are subject to the provisions of Priorities Regulation No. 1 (Part 944), as amended from time to time, except to the extent that any provision hereof may be inconsistent therewith, in which case the provisions of this order shall govern.

*The eyes of all America are upon the United States Treasury Roll of Honor appearing in the "Payroll Savings News." For copy write War Savings Staff, Treasury Department, Washington, D. C.*

## HOW TO "TOP THAT 10% BY NEW YEAR'S"

Out of the 13 labor-management conferences sponsored by the National Committee for Payroll Savings and conducted by the Treasury Department throughout the Nation has come this formula for reaching the 10% of gross payroll War Bond objective:

1. ***Decide to get 10%.***
   It has been the Treasury experience wherever management and labor have gotten together and decided the job could be done, the job was done.
2. ***Get a committee of labor and management to work out details for solicitation.***
   a. They, in turn, will appoint captain-leaders or chairmen who will be responsible for actual solicitation of no more than 10 workers.
   b. A card should be prepared for each and every worker with his name on it.
   c. An estimate should be made of the possible amount each worker can set aside so that an "over-all" of 10% is achieved. Some may not be able to set aside 10%, others can save more.
3. ***Set aside a date to start the drive.***
4. ***There should be little or no time between the announcement of the drive and the drive itself.***
   The drive should last not over 1 week.
5. The opening of the drive may be through a talk, a rally, or just a plain announcement in each department.
6. Schedule competition between departments; show progress charts daily.
7. Set as a goal the Treasury flag with a "T."

AS of today, more than 20,000 firms of all sizes have reached the "Honor Roll" goal of at least 10% of the gross payroll in War Bonds. This is a glorious testimony to the voluntary American way of facing emergencies.

But there is still more to be done. By January 1st, 1943, the Treasury hopes to raise participation from the present total of around 20,000,000 employees investing an average of 8% of earnings to over 30,000,000 investing an average of at least 10% of earnings in War Bonds.

You are urged to set your own sights accordingly and to do all in your power to start the new year on the Roll of Honor, to give War Bonds for bonuses, and to purchase up to the limit, both personally and as a company, of Series F and G Bonds. (Remember that the new limitation of purchases of F and G Bonds in any one calendar year has been increased from $50,000 to $100,000.)

*TIME IS SHORT.* Our country is counting on you to—

## "TOP THAT 10% BY NEW YEAR'S"

EVERYBODY EVERY PAYDAY AT LEAST 10%

*Save with*

# War Savings Bonds

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of

# Your Good Will

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## Your Happiness at Christmas

and

## A Victorious New Year

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